

## Attitude of Interstate Commerce Commissioners

THE NEWEST MEMBER of the Interstate Commerce Commission, Joseph B. Eastman, has struck a blow which is adapted to shatter any hope the optimistic might still have had that the Interstate Commerce Commission, as now constituted, would in the absence of specific instructions from Congress to do so, so regulate rates as to enable the railways under private operation to prosper and adequately develop their facilities. Mr. Eastman has sent a letter to the Senate Committee on Interstate Commerce, in which he says: "I believe that the roads should continue in the possession and control of the nation." He makes clear that he has no confidence in private management and is unqualifiedly in favor of government ownership and operation.

The law provides for the Interstate Commerce Commission to have nine members. It has only eight members now, because Commissioner Harlan's term expired some months ago and no successor to him has been appointed. The attitude of a majority of the present members of the Commission regarding the matter of adequate rates is indicated by a brief review of their records.

Commissioner Meyer has opposed advances in rates in every important advance rate case. He rendered a dissenting opinion in the 15 per cent case, the original decision in which was rendered on June 27, 1917, in which he opposed even the comparatively small advances favored by the majority of the Commission at that time. He declared he did not believe an emergency existed "in regard to carriers in the Eastern district of such a character as to make it imperative to authorize at this time the increase of class rates sanctioned by the majority." Within eight months, however—after government operation had been adopted—the Commission itself silently granted the rest of the 15 per cent advance in Eastern territory; within three months more the Railroad Administration advanced freight rates 25 per cent and passenger rates 50 per cent throughout the country. All these advances in rates, amounting to perhaps \$1,200,000,000 a year, are proving unequal to the extent of several hundred millions of dollars a year to the increases in expenses which have occurred since Mr. Meyer said two years ago that he could see no conditions justifying any advance.

Commissioner McChord also dissented in the 15 per cent case and opposed the advances in rates then granted. Recently he has attempted to show that the railways before government operation was adopted were allowed to charge adequate rates, and has even contended that no considerable advance in rates may be necessary to save the railway companies from bankruptcy after the roads are returned. How much reliance may be put upon Messrs. Meyer's and McChord's foresight and judgment in future is indicated by the extent to which they have shown these qualities in the past.

Commissioner Woolley, in a recent address, has opposed any further advances in rates and has argued that any deficiency of railroad revenues should continue to be made good from taxes.

Commissioner Aitchison was formerly a member of the Oregon Railroad Commission, served as the solicitor of the National Association of Railroad Commissioners, and always has been hostile in his attitude toward the railroad companies.

Commissioner Eastman, as we have seen, is an advocate of government ownership, and a man who has no faith in private management and favors government management, can hardly be relied on to help to so regulate the railways under private management as to enable them to prosper and furnish good and adequate service.

So much for the attitude of a majority of the present members of the Commission.

Commissioner Harlan favored a larger advance in rates than was granted in the five per cent case and advocated a larger advance in rates than was made in the original decision in the 15 per cent case. He said emphatically: "The record, in my judgment, demonstrates a proposition that has long been clear to me, viz., that a rate is a public question and that the existing rates, aside from any interest that the owners of the railroads may have in the matter, could well be advanced in the public interest, in order that assurance may thus be given for the early enlargement of our transportation facilities." Subsequent developments have shown that Commissioner Harlan had more foresight than either the members of the Commission who favored granting only part of the 15 per cent increase or those who opposed any increase, but he has not been reappointed by President Wilson.

The Cummins bill, which is pending in Congress, provides for the restoration of its old power of rate regulation to the Interstate Commerce Commission before government operation is abandoned. The Esch-Pomerene bill, which has the backing of the Interstate Commerce Commission, provides that when the railroads are returned to private operation the Commission shall exercise practically supreme power in the fixing of rates, and gives it no instructions as to how it shall regulate them except that it shall make them "reasonable" and in doing so shall take into consideration the cost of labor and other operating costs.

The *Railway Age* long was disposed to favor the concentration of all authority for the regulation of rates in the Interstate Commerce Commission, under instructions, however, that it must make the rates sufficient to enable the railways adequately to develop their facilities. We supposed that the members of the Commission had learned as much about the regulation and operation of railroads from the experience of recent years as had other people. The recent utterances of Commissioner McChord and Commissioner Woolley had greatly reduced our optimism. The recent statement of Commissioner Eastman has destroyed it.

The present crisis in the railroad industry demands frank speaking. The members of the Commission deserve commendation for having told just where they stand. With the past record and present views of the members of the Commission before it, Congress can have no excuse for acting on any false assumption as to what the Commission will do with any authority which it may be granted. It should be plain beyond peradventure to Congress, in the light of these things, that if the Commission is given, as proposed in the Esch-Pomerene bill, complete authority over rate-making, with no express instructions to make rates sufficiently high to enable the carriers adequately to develop their facilities, or to so make them as to enable the roads to earn an average of, say, at least six per cent, it is as certain as any future thing can be that the Commission, as at present constituted, will not make rates that will be adequate. If the Commission does not make rates adequate the expansion of railroad facilities will not be revived and private management will break down.

But if private operation is to be foredoomed to failure from the start, why return to it? Private ownership and operation will be as harmful to the country as government ownership and operation unless private operation is allowed to be carried on under a policy of regulation which will enable the railways to earn adequate net returns. The *Railway Age* is opposed to government ownership and operation. It is also opposed, however, to a return to private operation under legislation such as the Esch-Pomerene bill, which, instead of causing a revival of the prosperous operation and adequate development of our railroads, would merely insure that their prosperous operation and adequate development would be made impossible.

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If we cannot get needed reforms in our policy of regula-



tion now, after 18 months' experience with government operation, we never shall be able to get them; and if we are never going to be able to get them we should frankly recognize the fact that government ownership sooner or later is inevitable. If government ownership sooner or later is inevitable, let us take it now. If we don't want government ownership either now or later, let us adopt a policy of regulation under which private management can be made successful.

## Government Ownership in Canada

CANADA IS DRIFTING into a policy of more and more extensive government ownership and operation of railroads. "Drifting" is the right word, because its extension of this policy is not the result of thorough and intelligent consideration by either public men or the public. Canada has had a good deal of experience with government ownership, and yet its people, if one may judge by what is said by most of the newspapers and by persons met casually on trains and in hotels, know little about what that experience has been. Furthermore, the Canadian public, although it is being committed to a policy of extensive government ownership, seems to know almost nothing about the question of principle involved or the experience of other countries with government ownership.

Referring in a recent article in the *Railway Age* (June 20, page 1155) to the trend toward government ownership in Canada, J. L. Payne, Comptroller of Statistics of the Department of Railways and Canals of that country, said: "The point to keep definitely in view is that the far-reaching changes of 1918 and the current year came about without a direct decision being reached by either the government or the people on the underlying principle. Nobody may say at this moment that the judgment of either the administration or the voters of Canada has been declared in favor of or against state ownership of railways as distinct from corporate ownership. Whatever may happen in that regard in the future, scarcely a single aspect of the whole matter has been presented as a clear-cut issue." Mr. Payne was careful to state that he did not write as an advocate or an opponent of government ownership, but merely to present the facts.

While Canada is thus drifting into the extensive adoption of a policy to the probable consequences of which neither her public men nor her people have given much consideration, it is worth while to recall some of the history of government ownership in that country. The people of Canada don't seem to know it, but the history of government ownership in their own country is as replete with evidence and arguments against that policy as that of any other country in the world. It is a remarkable fact that in a land where some of the most conspicuous successes of private management have been achieved and some of the most conspicuous failures of government management have occurred, there should be a strong and steady drift toward more and more extensive government ownership.

Canada now has about 40,000 miles of railway in operation. Of this, about 17,000 miles, or 44 per cent, is being operated directly or indirectly by the government. Recently—and especially since the Canadian Northern was taken over—the management of the government lines has been left very largely in the hands of experienced railroad men appointed on their merits. If this should continue to be the case the results of government management in the future would be much better than in the past. There is much ground for fearing, however, that in the future, as in the past, political changes in Canada will have evil effects on railroad management; and if the losses incurred in the operation of the present and prospective very large govern-

ment railroad system should be as large in proportion as have been those incurred in the past by the Intercolonial, the Prince Edward Island, and other government lines, the burden imposed upon the taxpayers of Canada by the railway deficit would be so huge as very seriously to interfere with the progress and development of the entire Dominion.

In order to give the people of both the United States and Canada more information than they have had regarding the past history of government ownership in Canada, the *Railway Age* begins this week the publication of a series of three articles regarding Canada's experience which have been written by Harold G. Villard. In the article which we publish this week Mr. Villard goes back about 70 years, to the time when Nova Scotia began the construction of the first government line in Canada—a provincial line, which is now a part of the Intercolonial. He shows that the time it took to build this railway was greatly underestimated, that it cost more than twice as much as was originally expected, that it steadily failed to earn its fixed charges and usually failed to earn its operating expenses, and that it was the cause of serious political scandals.

It may be said that this is all ancient history and that government management would not be conducted now as then. The fact is, however, that the Intercolonial, of which Nova Scotia's Provincial Railway became a part, always has lost money as steadily as did the Provincial Railway. Besides, railways which have been constructed in Canada much more recently under government auspices—notably, the National Transcontinental, which cost three times the amount estimated—had had somewhat similar results. In a later article Mr. Villard will review briefly the history of the Temiskaming & Northern Ontario, which was built in comparatively recent years by the Province of Ontario, and which at times has been held up as a good example of successful government construction and operation.

Perhaps by reviewing the history of government ownership in Canada we may strengthen the opposition to it in the United States, and at the same time reduce Canada's tendency to drift into it. If, however, nothing can prevent Canada from drifting farther and farther into government ownership, it is at least desirable that its true history in that country should be told as a means to helping government management to avoid in future the mistakes of the past. Our readers in the United States, Canada and elsewhere will find Mr. Villard's chapters on Canadian government ownership both instructive and highly entertaining.

## The World's Coal Shortage and Electrification

THE PRESS DESPATCHES from London, quoted in the Foreign Railway News column of this week's issue, indicate that there is in the United Kingdom a serious condition, which, if it is not promptly remedied, is going to prove of world-wide importance. England is on the point of giving its coal miners increased wages, and effective July 16, 1919, it will, through the so-called Sankey award, also reduce the coal miners' day underground from eight to seven hours, and "subject to the economic position of the industry at the end of 1920," the hours of labor underground are to be reduced to six. This has already resulted in an attempted increase of six shillings in the price of coal to British industries, and Sir Auckland Geddes has expressed the fear that this increase may have to be made nine shillings, two pence. Combined with this there has been a very considerable decrease in the output of coal.

Sir Auckland Geddes has estimated that with the seven-hour day there will be produced in the year beginning July 16, the effective date of the reduction in hours, only between

214,000,000 and 217,000,000 tons, whereas in 1913 the output was 287,000,000 tons. An increase in the price of coal to British industries is handicap enough in the competition which Great Britain has to meet as the greatest export nation of the globe. But the shortage of coal is even more serious and is of even greater world-wide importance. Coal has always been one of Great Britain's greatest factors in export trade. In 1913 her exportable surplus was 77,000,000 tons. In the twelve months beginning in July, 1919, it is estimated that there will be only 20,000,000 tons available for export. This means that South America, Italy, Spain, South Africa, as well as many other countries, are going to be short of coal and that prices for coal in these countries, already twice as high as before the war, are going still higher. Considering that the mines of France were destroyed by the Germans and the fact that the product of the mines of the Ruhr and the Saar will be needed in Germany and in France, it is evident that America is the only other country that can supply coal for the countries mentioned, as not having suitable supplies of their own. This, if it works out as expected, will give the United States the great export trade in coal that Great Britain formerly had, but from the international railroad point of view it is going to mean much more.

The *Railway Age* has had articles recently on the consideration that is being given to electrification in Sweden, Brazil, Italy, France, Belgium and other countries. With the high price of coal, even if large supplies are secured from America, the use of hydro electric power must increase. That electrification is on an upward trend and that great extensions of electrified line are to be expected in many countries in the near future, seems a natural conclusion.

## Wabash

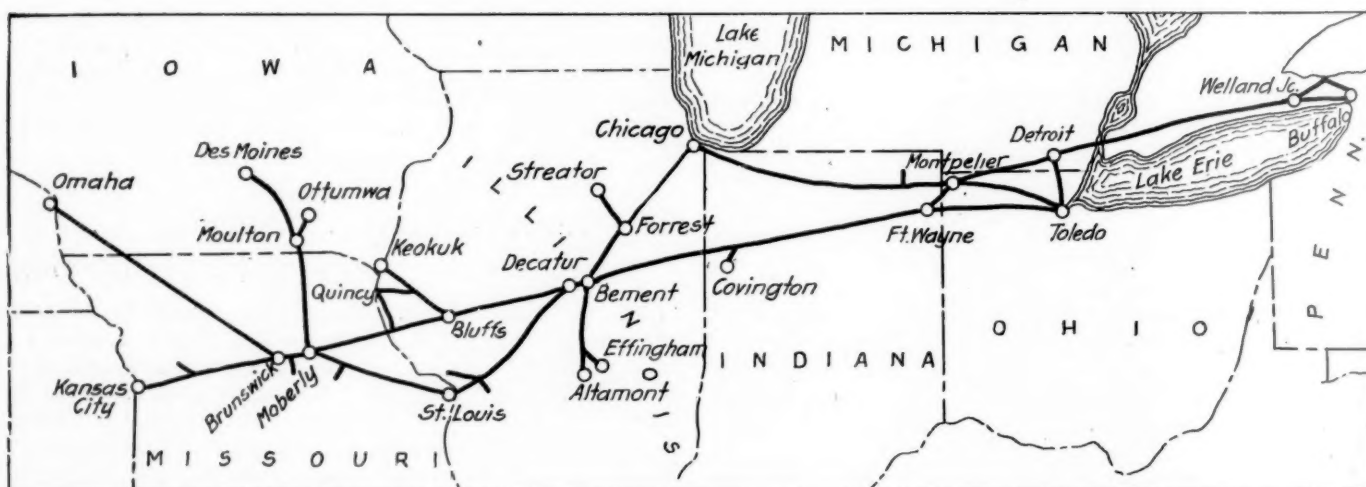
THE WABASH was reorganized and taken out of the hands of receivers November 1, 1915. Prior to the receivership, which took place in 1912, the company had struggled along for a number of years, just scraping off the rocks of receivership, without money for wholly adequate main-

estimated earnings on which the reorganization was based of \$37,659,000 for the fiscal year ended June 30, 1917. In 1918 the property earned \$48,246,000.

During the receivership and in the following period up to January 1, 1918, \$15,840,000 had been spent for additions and betterments from the sums provided for this purpose in the reorganization plans. In addition \$5,860,000 surplus earned after payment of dividends on the preferred "A" stock since November 1, 1915, to January 1, 1918, was spent for improvements and \$2,258,000 interest bearing securities were retired. A total of \$2,310,000 was paid out in dividends during this period.

In addition to the extra heavy charges for maintenance during the receivership necessitated by deferred maintenance and improvement work which tended to bring down the operating income for the first part of the test period on which the government rental is based, the expenditure of the large sums for additions and betterments during 1916 and 1917 tended to increase the earning capacity of the road in 1918, for which increase in earning capacity no allowance is made in the standard rental contract. Since the receivership the company has bought 25 Santa Fe type locomotives, 2,300 steel underframe freight cars and placed steel underframes and steel draft gears on 7,000 additional freight cars and installed superheaters on 150 locomotives. The government in 1918 got the benefit of all these improvements. It is rather interesting to note that Chairman W. H. Williams in his report to stockholders estimates that the installation of superheaters on 150 locomotives increased "the operating efficiency over 15 per cent."

Notwithstanding the war conditions, the operation of the property in 1918 strongly reflects the improvement in its condition during and since the receivership. With total operating revenues of \$48,246,000 in 1918, as against \$40,472,000 in 1917, operating income amounted to \$6,785,000. This compares with \$10,539,000 operating income in 1917. Net income amounted to \$5,668,000 in 1918, comparing with \$4,227,000 in 1917. This net income (to the government) in 1918 compares with an average net operating income for the test period of \$5,867,000. The company claims that



The Wabash

tenance, much less for keeping abreast of the development of modern railroading. During the receivership the property was greatly improved. The reorganization was a drastic one and the new company, except for a rather small working capital, entered into possession with good prospects of successful operation. Insofar as gross earning power was concerned the property more than justified the predictions of the reorganization committee. The earnings for the calendar year 1917 amounted to \$40,472,000, as compared with the

instead of this latter amount it is entitled to \$8,681,000 rental.

As an indication of the benefit which the government received from improvements made during the test period, the increase in trainload is striking. The average revenue trainload in 1918 was 606 tons and in 1917 568 tons. This was in spite of the fact that there was an average of 10.07 empty freight cars per train-mile in 1918, as against 9.37 in 1917. A big improvement in car loading is to be noted.



The tons of freight per loaded car averaged 24.40 in 1918, as against 21.79 in 1917. The loaded car mileage was reduced from 219,393,000 in 1917 to 188,961,000 in 1918, and empty car mileage from 78,180,000 in 1917 to 75,752,000 in 1918.

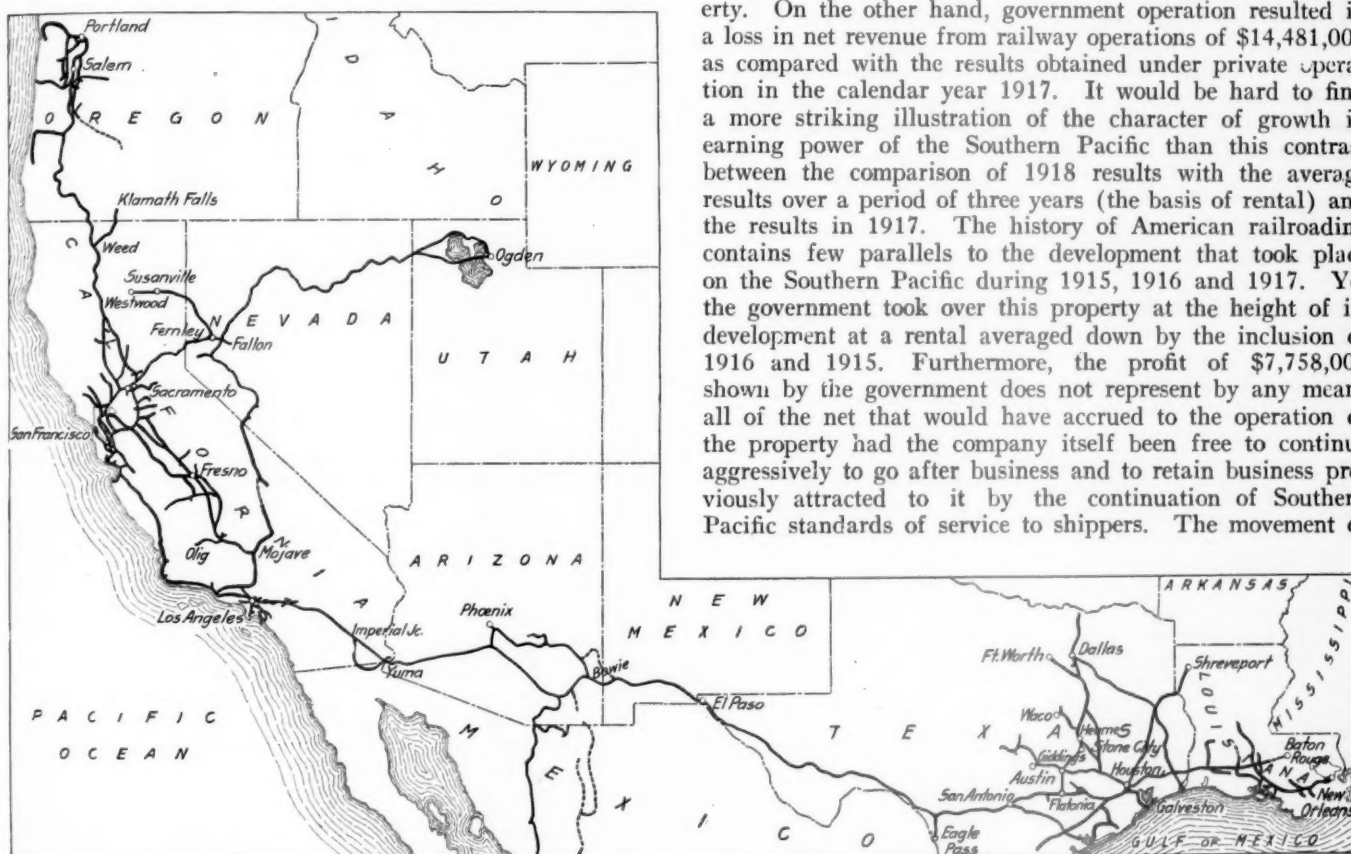
There was a falling off in freight tonnage, due apparently to a deflection of traffic to other lines. The total tonnage carried in 1918 amounted to 17,106,000 tons and in 1917 to 18,156,000 tons. Of the total tonnage in 1918, 8,421,000 tons originated on the Wabash and 8,685,000 tons was received from connections. Of the total in 1917, 8,420,000 tons originated on the Wabash and 9,736,000 tons was received from connections. The principal changes in the character of the commodities carried were an increase in the proportion of products of agriculture in 1918 and a decrease in the proportion of products of mines. Thus, in 1918, the total tonnage of products of agriculture was 3,321,000, or 19.4 per cent of the total tonnage carried, whereas in 1917 the tonnage of products of agriculture amounted to 2,791,000, or but 16.4 per cent of the total tonnage carried. Products of

operation of the property by the government in 1918 and the corresponding figures for private operation in 1917. This is not the income account of the company in 1918:

	1918	1917
Total mileage operated.....	2,519,49	2,519,06
Freight revenue .....	\$34,498,242	\$29,342,855
Passenger revenue .....	9,993,359	7,673,810
Total operating revenues.....	48,246,411	40,471,998
Maintenance of ways and structures..	6,104,353	3,961,075
Maintenance of equipment .....	9,497,765	5,466,120
Traffic expenses .....	711,877	1,039,212
Transportation expenses .....	22,489,629	16,888,331
General expenses .....	1,099,241	918,040
Total operating expenses .....	40,124,609	28,468,896
Taxes .....	1,334,103	1,458,624
Operating income .....	6,785,398	10,538,851
Gross income .....	9,053,173	11,098,969
Net income .....	5,668,339	4,227,105

## Southern Pacific

GOVERNMENT OPERATION of the Southern Pacific in 1918 netted the government a profit of \$7,758,000, over and above the rental which the Administration paid the Southern Pacific and proprietary companies for the use of the property. On the other hand, government operation resulted in a loss in net revenue from railway operations of \$14,481,000 as compared with the results obtained under private operation in the calendar year 1917. It would be hard to find a more striking illustration of the character of growth in earning power of the Southern Pacific than this contrast between the comparison of 1918 results with the average results over a period of three years (the basis of rental) and the results in 1917. The history of American railroading contains few parallels to the development that took place on the Southern Pacific during 1915, 1916 and 1917. Yet the government took over this property at the height of its development at a rental averaged down by the inclusion of 1916 and 1915. Furthermore, the profit of \$7,758,000 shown by the government does not represent by any means all of the net that would have accrued to the operation of the property had the company itself been free to continue aggressively to go after business and to retain business previously attracted to it by the continuation of Southern Pacific standards of service to shippers. The movement of



The Southern Pacific

mines amounted to 6,544,000 in 1918 and to 7,202,000 tons in 1917, these being, respectively, 38.3 per cent of the total tonnage in 1918 and 39.8 per cent in 1917.

Handling a smaller freight tonnage and running a less number of both freight train-miles and passenger train-miles, the Wabash under government operation had an average of 17,332 employees in service in 1918, as against 16,563, the average for the previous year under private operation.

The Wabash was hard hit in 1918 by the increase in cost per ton of fuel. In 1917 coal averaged \$1.977 per ton. This low cost was probably due to the hold over of contracts made in previous years. Apparently these contracts ran out, or many of them did, in 1917, for in 1918 the average cost of coal was \$2.639.

The following table shows the principal figures for the

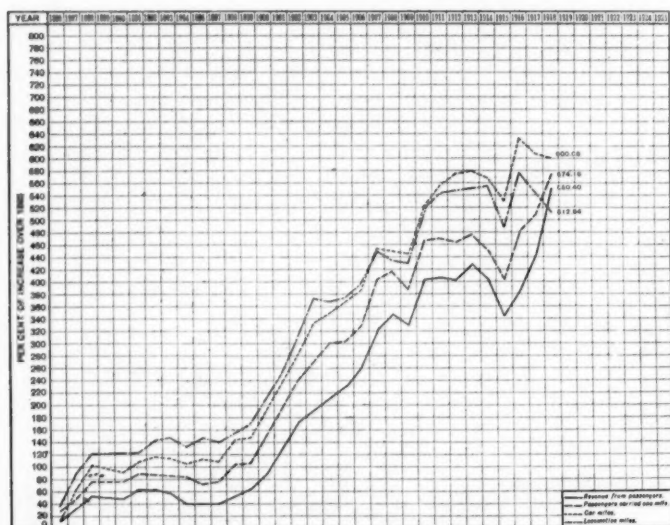
deciduous fruit from the Pacific Coast and of live stock and packing house products were very large in 1918, and the demand for California canned goods for shipment overseas was very great. The lumber business was good and the shipbuilding activities on the Pacific Coast increased many classes of traffic in addition to the movement of raw materials used specifically in the building of ships.

In commenting on these conditions, Julius Kruttschnitt, chairman of the executive committee, in his annual report to the stockholders, says:

"These conditions, combined with the absence of regular steamship service through the Panama Canal and along the Pacific Coast, would have insured to your lines under the management of your own organization a volume of traffic at least equal to that of the calendar year 1917, which

produced the largest gross earnings in the history of the company; but, after the management of your lines was taken out of the hands of your officers, the closing of the traffic agencies through which daily intercourse with your patrons had been maintained, the disturbance of the relationship of both rates and service to the disadvantage of your lines, and the diversion of traffic to competitive routes, resulted in your rail lines transporting 653,707,093 ton miles of freight less than handled during the preceding year, a decrease of 4.87 per cent."

In 1918 total operating revenues amounted to \$221,611,000, comparing with \$193,971,000 operating revenues in 1917. Total operating expenses in 1918 amounted to \$162,722,000, compared with \$120,602,000 in 1917. Tons of revenue freight carried in 1918 totaled 44,014,000, a decrease of 964,000 tons, or 2.14 per cent. Ton mileage of revenue freight was 12,765,000,000 in 1918, a decrease of 654,000,000 ton miles or 4.87 per cent. Freight train mileage decreased in even greater proportion, amounting to 20,417,000 in 1918, or 2,467,000 less than in 1917, a decrease of 10.78 per cent. Freight locomotive mileage totaled 26,091,000 in 1918, which was 2,730,000 less than in 1917, a decrease of 9.47 per cent. The average number of loaded cars to a train was the same in the two years, an average of 24 cars each year. But there was on an average almost one more empty car per train, making the average of the total number of cars per train between 34 and 35 in 1918, and less than 34 in 1917. The revenue freight train load averaged 577 tons in 1918, an increase of 5.59 per cent over 1917. The average load per loaded car was 24.29 tons in 1918 and 22.97 in 1917, an increase of 5.75 per cent.



**Passenger Service and Traffic**

Showing by Years to December 31, 1918, the Per Cent of Increase Over the Calendar Year 1885

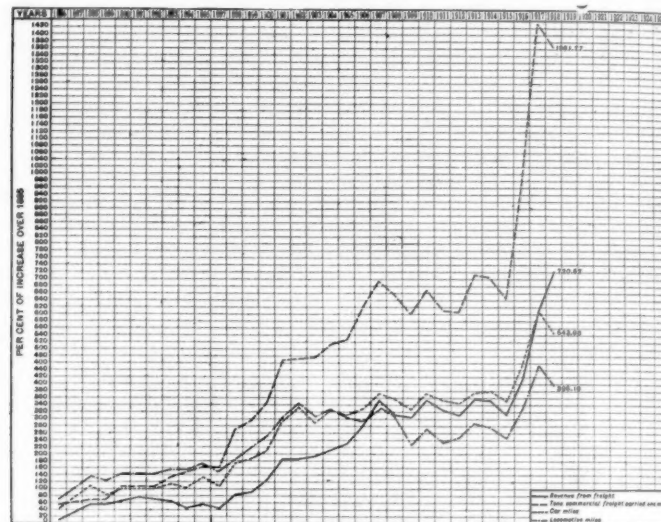
The revenue per ton per mile of freight was 1.113 cents in 1918, as against 0.923 cents in 1917, an increase of 21.59 per cent.

Mr. Kruttschnitt brings out in a striking way how small a part of the increased cost of living to the consumer is made up of increased transportation charges. He says: "In the period from 1910 to 1919 the price of dressed beef originating in Chicago and transported to New York increased from 22½ cents to 40 cents per pound, or, expressed in our smallest unit of value, 175 mills, while the freight rate increased 2.4 mills, or only 1.4 per cent. The price per pound of ham and bacon transported between the same points increased 205 mills, whereof the increase in freight rate was responsible for 1½ mills, or only 0.73 per cent. The increase in the cost of a suit of underwear

transported from Boston to Chicago in the period 1910 to 1919 was 1,250 mills, to which the increase in freight rate contributed 3 mills, or 0.25 per cent. A pair of shoes, transported from Boston to Chicago in the same period, increased in price 3,500 mills, of which the increase in freight rate was responsible for 6 mills, or 0.16 per cent.

"No coin is small enough to represent any of these increases in cost, but if the dealer should add one copper cent in each case to the 1910 prices, to reimburse him for the increased cost of his commodity due to increased freight rates, he would grossly overcharge the purchaser in every case.

"He would make him pay nearly double the proper amount in the case of a pair of shoes, and over six times the proper amount in the case of a pound of ham or bacon."



**Freight Service and Traffic**

Showing by Years to December 31, 1918, the Per Cent of Increase Over the Calendar Year 1885

Passenger business was helped by a considerable troop movement, and revenues were increased somewhat through the establishment of the three-cent-a-mile rate, although this did not help western lines as much as it did eastern lines. Passenger revenue in 1918 amounted to \$52,995,000, an increase of \$8,120,000, or over 18 per cent. The number of passengers carried was 26,624,000 (excluding ferry suburban passengers), an increase of 12 per cent. The average journey per passenger, however, was slightly shorter, being 42.21 miles in 1918.

Increases of 47 per cent in expenses of maintenance of way, 81 per cent in expenses for maintenance of equipment exclusive of depreciation and retirements, and of 27 per cent in the cost of transportation seem high, although the increase in transportation is lower than that of many other large American systems. It is rather interesting to compare these percentages of increase in 1918 over 1917 with the percentages of increase in 1918 over the three-year test period. Maintenance of way increased 48 per cent, maintenance of equipment 83 per cent (including depreciation), and transportation expenses 70 per cent. It would appear that either transportation expenses in 1918 were held down remarkably well as compared with 1917, or that maintenance expenses were comparatively more liberal in 1918 than in 1917. This latter assumption, however, is by no means borne out by the figures for units of work done in maintenance.

In 1917 473 track miles of new 90-lb. steel rail was used for renewals, as against 373 miles in 1918. In 1917 1,200,000 burnettized ties were used in renewal, as against 1,473,000 in 1918, and 1,877,000 untreated ties were used



in renewal in 1917 as against 2,417,000 in 1918. The number of tie plates used in 1917 was 2,644,000, in 1918 1,910,000. The number of continuous rail joints used in 1917 was 522,000; in 1918 302,000. The number of feet of untreated timber used in repairs and renewals in 1917 was 15,978,000; in 1918 5,822,000. At the end of 1917 43 per cent of all locomotives were in thorough order, 31 per cent in good order, 15 per cent requiring repairs and 11 per cent in shop, while at the end of 1918 46 per cent were in thorough order, 29 per cent in good order, 14 per cent requiring repairs and 11 per cent in shops, and yet the cost of repairs per locomotive, exclusive of replacements and depreciation, was \$4,758 in 1917 and \$8,804 in 1918. It is hard to readjust one's ideas of maintenance costs to appreciate what it means for repairs of locomotives to average nearly \$9,000 per locomotive. Repairs of passenger cars is almost equally bad insofar as increase in cost is concerned. In 1917 the average cost for repairs alone averaged \$826 per car; in 1918 the average was \$1,426. Repairs of freight cars averaged \$104 in 1917 and \$194 in 1918. The cost per hundred miles run was 62 cents in 1917 and \$1.34 in 1918.

The Southern Pacific has been very liberal in expenditures for maintenance of its equipment in years past. It has been liberal also in providing ample equipment for the business to be handled, and at the time the government took over the road the company had orders outstanding for 57 locomotives, 41 passenger cars and 718 freight cars, and was building in its own shops 56 locomotives and 3,808 freight cars. The director general, however, refused to sign a contract with the Southern Pacific unless the company would agree to buy 1,000 box cars at a cost of over \$3,000,000. The Southern Pacific Company claims, apparently with a good deal of justice, that the design of these cars was poor and their cost was excessive and that in buying them they yielded only to major force.

In 1918 there was a total of \$20,188,000 spent for additions and betterments on the Southern Pacific system. Taking into account the equipment retirements, etc., the net increase in investment in road and equipment was \$14,714,000.

In 1909 the Southern Pacific issued \$81,814,000 four per cent 20-year convertible bonds. The holders of these bonds had the privilege of converting their bonds at par value into common stock at 130 up to June 1, 1919. Of the total issue of bonds, \$26,657,000 or 33.39 per cent were converted up to the day of the closing of this privilege. Taken in its full significance, this is a remarkably comprehensive commentary on the success of the Southern Pacific in the face of conditions generally adverse to railroad development and profitable operation.

The following table shows the principal figures for operation in 1918, 1917, and the average for the three years of the test period:

	1918	1917	Three Years Test Period
Mileage Operated .....	11,101	11,137	10,978
Freight Revenue* .....	\$142,030,780	\$123,845,562	\$101,747,133
Passenger Revenue* .....	52,995,032	44,875,012	39,561,045
Total Railway Operating Revenue .....	221,611,206	193,971,490	155,148,196
Maintenance of Way and Structures .....	25,824,726	17,522,352	17,454,799
Maintenance of Equipment .....	40,747,835	24,261,507	22,266,303
Traffic Expenses .....	2,249,360	3,131,417	3,075,421
Transportation Expenses .....	86,084,898	68,778,430	50,609,283
General Expenses .....	4,925,247	4,584,982	4,127,596
Total operating expenses .....	162,722,372	120,601,823	99,469,518
Operating Income .....	49,430,478	59,507,253	47,736,670

#### CORPORATION INCOME ACCOUNT FOR 1918

Standard return (rental) .....	\$38,421,846
Miscellaneous operating income .....	4,317,995
Non-operating income .....	28,448,906
Gross income .....	71,188,748
Net income .....	24,090,529
Dividends .....	16,404,055
Surplus .....	7,686,474

## Delaware & Hudson

THE DELAWARE & HUDSON carried less freight in 1918 than in 1917. The falling off in tonnage occurred almost entirely in the freight received from connections. In 1918 24,934,000 tons of revenue freight were handled by the Delaware & Hudson and of this tonnage 14,231 tons originated on the company's own lines and 10,703,000 tons were received from connections. In 1917 the total tonnage handled was 26,748,000 tons, of which 14,396,000 tons originated on the company's lines and 12,352,000 tons were received from connections. Under private operation, the Delaware & Hudson is a competitor of the Rutland and the New York Central for business from Albany to Canada. Less directly it competes with the Boston & Maine route to Canada. Under government operation freight was routed in accordance with regional orders irrespective of the wishes of shippers. Other roads in eastern territory showed large increases in freight business and it is safe to assume that the Delaware & Hudson, under non-competitive conditions and government operation, did not handle the business that it could have handled under private management and competitive conditions.

Total operating revenues in 1918 amounted to \$34,790,000, comparing with \$29,936,000 in 1917. Freight revenue amounted to \$30,105,000, in 1918 and to \$25,323,000 in 1917. The increase in freight revenue was, therefore, but 19 per cent or less than the average increase in freight rates alone.

Without large increases in gross to offset increased wage schedules, net was hard hit. In 1918 the operating ratio was 90.12 per cent; in 1917 this ratio was 78.08 per cent. Total operating expenses in 1918 amounted to \$31,354,000 as compared with \$23,375,000 in 1917. Transportation expenses amounted to \$16,556,000, an increase of 30 per cent over 1917. This is not abnormally high as compared with other eastern roads.

The freight train mileage in 1918 totaled 5,173,000, of which 93,000 was light as compared with 5,180,000 in 1917, of which 105,000 was light. The number of loaded freight cars per train was 23 in 1918 and 24 in 1917. The number of empty cars was 12 in 1918 and about the same in 1917.

The average revenue train load was 770 tons in 1918 and 748 tons in 1917. The number of tons of revenue freight per loaded car mile was 34 in 1918 and 32 in 1917. The average haul of freight was 163 miles in 1918 and 148 miles in 1917.

Although much larger sums were spent on both maintenance of way and maintenance of equipment, the physical units, showing the amount of replacement in maintenance of way, were smaller in 1918 than in 1917. Maintenance of way and structures cost \$3,738,000 in 1918, comparing with \$2,501,000 in 1917.

The total number of ties laid in replacement and betterment in 1918 was 242,000, of which 187,000 were untreated pine ties and 36,000 untreated oak ties. This compares with a total number in 1917 of 335,000, of which 225,000 were untreated pine and 70,000 untreated oak.

The total tonnage of rail laid in replacement and betterment in 1918 was 12,614 comparing with 14,952, in 1917. The cost averaged from \$32 per ton for open hearth 90-lb. rail to \$20 per ton for second-hand 90-lb. rail in 1918, and prices were about the same in 1917.

The number of locomotives in service at the beginning of the year, 1918, was 474; 23 were added and 6 were destroyed during the year. The number of freight cars at the beginning of the year was 18,295 and 244 were added and 478 retired during the year. The number of passenger cars at the beginning of the year, 1918, was 468; none were added and 14 were retired.

Maintenance of equipment cost \$9,536,000 in 1918, com-

paring with \$6,655,000 in 1917. Of course, repairs to equipment and renewals of equipment are distinct, so that the much larger sums spent for maintenance of equipment may reflect not only higher wage costs but actually more work done, although no data is available to make an accurate comparison.

The rental which the government is to pay the company is \$7,415,000. In 1918, operating income amounted to \$2,585,000, and gross income to \$4,050,000. Disregarding any adjustments which may be made, the amount which the government will receive from the operation of the Delaware & Hudson will be somewhere between these two income figures. The road, therefore, has been operated during 1918 at a considerable loss. In the *Railway Age* of May 9, an extended comment was made on the development of the property as described in the annual report of President L. F. Loree to his stockholders. The figures used in the present comments are those reported to the Interstate Commerce Commission by the federal auditor. The record of the development of this, one of the oldest American railroads, compared with the record of the results of government operation in 1918 makes a striking contrast, explainable in part probably because of abnormal conditions, but, nevertheless, an interesting contrast.

The following table shows the principal figures for operation of the property under the government in 1918 and under private management in 1917:

	1918	1917
Mileage operated .....	910	879
Freight revenue .....	\$30,104,926	\$25,322,988
Passenger revenue .....	2,804,056	3,020,185
Total operating revenues .....	34,789,864	29,935,625
Maintenance of way and structures .....	3,737,523	2,501,166
Maintenance of equipment .....	9,536,063	6,654,710
Traffic expenses .....	254,673	325,557
Transportation expenses .....	16,556,076	12,702,049
General expenses .....	1,052,963	1,071,236
Total operating expenses .....	31,353,784	23,374,755
Taxes .....	849,289	855,551
Operating income .....	2,585,123	5,701,869
Gross income .....	4,049,526	.....
Net income .....	3,577,217	.....

The corporation income account is as follows:

	1918
Rental .....	\$7,415,149
Gross income .....	10,602,781
Net income .....	4,714,792
Dividends .....	3,825,272

## New Books

*Cambria Steel Handbook.* Prepared and compiled by George E. Thackray, C.E. 603 pages, illustrated, 4½ in. by 6¾ in., flexible binding. Published by the Cambria Steel Company, Philadelphia, Pa.

This is the twelfth edition of the Cambria handbook and in addition to a thorough revision of all data pertaining to the various structural steel sections manufactured by the Cambria Steel Company, it contains a large amount of new material covering the wider range of structural steel sections now manufactured, and includes additional tables of use in calculations involved in the design of structures in which the sections are used. Among the new sections for which illustrations and properties are included in the new edition are a number of bulb angles, small channels for cars, ship channels, T-bars and three sizes of rolled steel car stakes. Among the large number of new tables which have been added are weights of flat and corrugated steel sheathing, roof truss dimensions and stresses, sizes of spikes and wood screws, square roots and cube roots of fractions, weights of circular steel plates, trigonometric formulae, and similar information.

## Letters to the Editor

### The Dunkirk Wreck and the Deadly Angle Cock

NEW YORK.

TO THE EDITOR:

Nearly forty-seven years have passed since the automatic air brake came into use as a means for controlling the motion of railway trains, and for over thirty years it has been in general use on both passenger and freight trains, yet it still retains that fundamental element of danger—the closed angle cock.

With the automatic brakes now in general use, the train may be charged, the brakes tested and everything put in working order before leaving the terminal, and yet before or after the train departs, an angle cock may be closed between the engine and tender, or elsewhere in the train, without the knowledge of the engineman or of any member of the train crew and thus deprive them, at the critical moment, of the only means on which they rely for safely controlling the train. This may be caused accidentally through something falling upon the angle cock, by a tramp accidentally or maliciously, or by an employee forgetting to open a closed angle cock. There have been many cases of the last.

No more convincing evidence of this truth is required than that furnished by the investigation of the recent rear collision at Dunkirk, resulting in the loss of many lives, the serious injury to a score or more of passengers and a heavy loss in property damage, due to an angle cock being closed between the engine and the first car.

It is reported as a result of the investigation that the engineman of the second train shut off steam probably half a mile east of the distant signal, and that he began to sound the whistle signal for brakes at about the time the locomotive passed the distant signal, which was some 6,000 ft. east of the point at which the collision occurred. The evidence indicated quite positively, therefore, that the angle cock on the rear of the tender must have been closed before passing the distant signal, or at any rate but very little later. The engineman probably realized he was powerless to stop his train fully a minute and a half before the collision occurred.

It has remained for the Automatic Straight Air Brake Company to provide against this menace to the safety of the movement of passenger and freight trains by the development of a brake designed on superior principles, in which, when an angle cock is closed, the brakes apply within a few seconds. On the other hand, a sluggish feed valve does not cause the brakes to apply.

The application of the A. S. A. brake depends merely upon a brake pipe reduction being made, and is positive and precise regardless of the rate of reduction, which is such a vital element in the operation of other types of brake equipment. With brake pipe leakage of, say, two pounds per minute, which is a reasonable assumption for a train of that character, it may be positively asserted that had A. S. A. brake equipment been in use on Train No. 7, the train brakes would have been applied before the collision occurred, with the result of, if not entirely preventing the accident, at least greatly mitigating the severity of the collision and reducing the extent of the disaster. Had the angle cock been as far back as the water station pans the A. S. A. brake would have stopped the train without any collision whatever. It is obvious that the improved brake is an urgent necessity for the protection of lives and property in the daily operation of the railroads.

SPENCER G. NEAL.



# Railway Electrification in France and Belgium

Important Plans Under Consideration in Both Countries—  
Especially Desirable in France, with Large Water Supplies

By Robert E. Thayer  
European Editor of the *Railway Age*

PARIS, June 16, 1919.

**A** LONG WITH OTHER MATTERS of railroad construction in France and Belgium due to the devastation caused by the war, very serious consideration is being given to line electrification. In France this is particularly desirable on account of the increased cost of coal, and because of the fact there are in certain sections of the country large water supplies, which can very easily be used for the operation of hydro-electric plants.

Committees of railway men and engineers have been formed in both countries, and a committee of French railway engineers has already arrived in America to study the situation there.

## Electrification in France

M. Clavelle, Minister of Public Works and Transports of France, in a report made on the future development of French railways, states that it is highly important for France to make the most of its vast resources in water power for generating electricity, particularly at a time when its supplies of mineral combustibles are not going to be sufficient to meet the needs of its industries. With this end in view, he had an inventory made, at the end of 1916, of the available hydraulic power of the public water courses, and later reports were requested for each region, showing exactly the quantity of hydraulic energy which could be used by the public services, employing the most modern methods, without completely using up the energy of the watercourses. A particular study was to be made of the economical use of electricity for motive power on railroads, the kind of traffic, its density, the grade of the lines, and the difference in cost of each region being considered.

The Service of the Control of Railroads, in agreement with the technical services, is in charge of the studies to be made regarding the use of hydro-electricity on the railroads. Particularly attention is to be paid to the fair division of electric power between the public services and agricultural and industrial interests, and committees were formed made up of officers of the Government, manufacturers, etc.

The special committee appointed to draw up a program for the electrification of the principal railroads has pursued its studies with energy and by the end of March, 1919, had been able to gather together much valuable data concerning the use of hydro-electricity. Its program proposes the electrification of 5,220 miles of lines as follows:

Paris-Orleans .....	1,926 miles out of a total of 4,839 miles
Paris, Lyons & Mediterranean ..	1,367 miles out of a total of 6,040 miles
Midi .....	1,926 miles out of a total of 2,524 miles

With the traffic of 1913 the kilowatt-hour consumption would have reached:

Paris-Orleans .....	280 millions kw-hr.
Paris, Lyons & Mediterranean ..	550 millions kw-hr.
Midi .....	330 millions kw-hr.
Total .....	1,600 millions kw-hr.

With the estimated traffic in the immediate future the consumption is estimated at:

Paris-Orleans .....	560 millions kw-hr.
Paris, Lyons & Mediterranean ..	1,100 millions kw-hr.
Midi .....	600 millions kw-hr.
Total .....	2,260 millions kw-hr.

In determining upon lines to be electrified, the Midi and the Paris-Orleans considered the relation of the cost of elec-

tric power as compared with the cost of power with steam locomotives, and the comparison showed that mountain lines with sufficient traffic should be among the first to be electrified. They also considered the location of the source of hydro-electric energy in relation to the lines, and the importance of this power to other industries.

On the Paris, Lyons & Mediterranean, however, the possibility has been considered of using electricity on lines of low grade where there is a heavy traffic, even before putting it on mountain lines where the traffic of these lines is very small.

The proposed sources of electric power are the following:

For the Paris-Orleans—The Upper Dordogne River and its branches.  
For the Midi—The Pyrénées.  
For the Paris, Lyons & Mediterranean—Certain waterfalls in the Central Plateau and in the Alps, and the enormous reservoir of energy formed by the great plants at present existing or going to be constructed in the region.

The probable cost is estimated as follows, based on prices before the war:

Paris-Orleans .....	\$94,000,000
Paris, Lyons & Mediterranean ..	93,000,000
Midi .....	148,000,000
Total .....	\$335,000,000

With the traffic of 1913, electrification would save 1,500,000 metric tons of coal, and in the near future the economy should not be less than 3,000,000 metric tons.

A special committee has been formed for the purpose of studying the use of electric energy. It at first obtained all the information possible from the principal electric companies, and it will use this as a basis for improving the present legislation, if necessary, in order to promote the development of the distribution of power. Members of the committee have already visited America to study conditions there. The committee has also had a general map made of France, showing the present plants and the lines for distribution of electric power.

## Electrification in Belgium

The plans for electrification on the Belgian State railways has not progressed to the same extent as on the French railways. An extensive commission has been formed, however, for consideration of the work. This commission is under the direction of Le Baron Ancoine, a member of the Belgian Senate, with M. Jacquin, who carries on the active work of the committee, as general secretary. He is located at 25 Rue de la Charité, Brussels. The commission has been divided into three sections, one considering the distribution of power, which is under the direction of M. de Loneux, Director General of electric power of Belgium; a second section to consider the rolling stock to be used, which is under the direction of M. Gerard, General Secretary of the Belgian State railways; and a third section on the management, which is under the direction of M. Tondelier, who is President of the Belgian State railways. Both English and French expert engineers are included in this commission; two of the members are, at the present time, in America with the French commission.

While no definite plans have been adopted, a direct current system, using the third rail with 1,500 volts, and a three phase alternating current system with 50 cycles, is being considered.

The plan under consideration now is to electrify important

lines radiating from Brussels. The first line to be considered will probably be that between Antwerp and Arlon, a distance of about 147 miles. Consideration is also being given to electrification of the line from Brussels to Louvain, a distance of about 18.5 miles; from Brussels to Charleroi, a distance of about 35 miles; from Brussels to Braine-le-Compte, a distance of about 18.5 miles; from Brussels to Enghien, a distance of about 18.5 miles; and from Brussels to Ghent, a distance of about 36 miles.

## Government Ownership a Dead Issue

**C**HARLES E. ELMQUIST, president of the National Association of Railway and Utilities Commissioners, has written a letter to Joseph B. Eastman, of the Interstate Commerce Commission, taking issue with the position assumed by Mr. Eastman, also a former State railway commissioner, in his letter to the Senate Committee, published in last week's issue. Mr. Elmquist says:

"I agree with many of your statements, but must reject some of your conclusions, because the logic of your argument leads to immediate acceptance of the permanent policy of government ownership and operation.

"It is conceivable that the people may in the future declare for such a policy, but not, I take it, until they have become convinced that it will afford better and cheaper service than private operation, under strict regulation. Before we determine on the policy of government ownership and operation, however, the people of the country are entitled to have our regulating system rounded out and made adequate to cover all phases of the relations between the public service agency, the public it serves, and its employees. Just now the practically unanimous opinion of statesmen, economists, business men, shippers, stock-owners and bankers, railroads and regulating commissions, both state and federal, is that the hour has struck for the enactment of legislation which will strengthen the arm of regulation so as to prevent well known abuses, financial and otherwise, and give the public adequate service at reasonable rates, and at the same time enable the carriers to so function as to ensure a proper return upon capital, invite credit, make natural approved consolidations in the interest of the public, and secure the equipment, terminals and extensions necessary to the development of the country.

"In my judgment, Congress is preparing to take action along these lines. It should receive from regulating commissions that full measure of assistance which their wide experience and diligent study so well qualify them to render. Your communication raises an economic question of profound importance. This we need not now discuss, as there is one practical objection to your proposal which to me appears insuperable:

"The fact is that the railroads are going back to private operation. The President so stated in his message last June, and set the time at the end of the year. This harmonizes with the purpose of war-time government operation. It was as a war measure that the carriers were taken over. But the war emergency ended, apparently when the armistice was signed, and beyond all question with the signing of the treaty of peace. The President's decision is in accord with the overwhelming sentiment of the country. This sentiment is a natural reaction from the tremendous expansion of governmental activities during the war. That expansion devitalized business initiative outside of its own sphere, causing the curtailment of production and the interference with long established customs, usages and practices.

"The sentiment against government ownership and operation has been crystallized by the experience in shipbuilding and aircraft production, futile in results and appalling in losses; by the oft-repeated charges of extravagance in the

ordnance and other war departments; by the unhappy and costly experiment in the operation of the wire systems with its largely increased charges and inferior service; by the character of the freight and passenger service rendered during government operation; repeated orders that ultimately increased wages about a billion dollars, although the Railroad Administration knew that it was facing a large deficit in operation; the extraordinary increases in freight and passenger rates at a moment's notice and without giving a hearing to those from whose pockets the money was to come; and the dreary story of losses ranging from \$36,000,000 to \$60,000,000 a month since the first day of the year, accompanied by the uninviting prospect of still another large increase in rates.

"The tide against government ownership and operation is practically irresistible. We are facing a condition, and, since private operation is inevitable, all students of regulation should join forces to secure the most helpful and constructive legislation.

"Advocates of government ownership and operation present very persuasive arguments. Equally persuasive arguments against such proposals can readily be suggested. In the present state of mind, however, the public will not give the subject fair consideration. And yet the proper determination of the question is so vitally important to the American people that it should not be considered until they are ready to listen to all arguments, give to them proper weight, and determine the question after frank and thoughtful discussion.

"It is apparent, therefore, that this is not the time to consider the question."

## Casualties to Railroad

### Employees in April

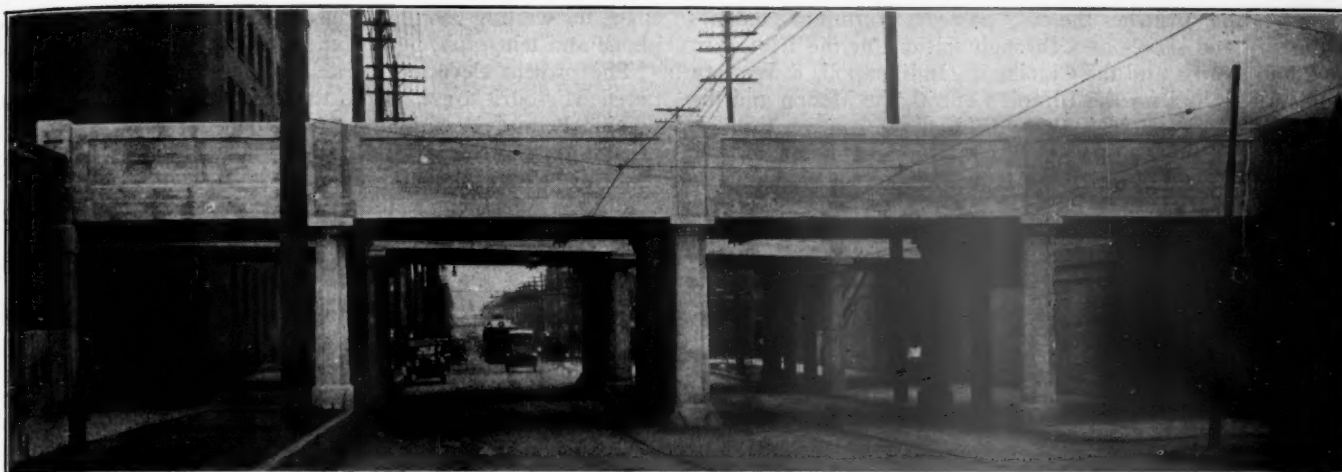
**T**HE SAFETY SECTION, Division of Operation, of the United States Railroad Administration, has issued Bulletin No. 5, giving a summary of the statistics of persons killed and injured on Class 1 railroads for the month of April, 1919. The totals for each of the seven regions are given in a large table, and the aggregate for the whole seven is: Employees killed, 131; injured, 9,057; all cases, including employees, killed 511, injured 10,032. The same totals for April, 1918, are 229 employees killed and 11,706 injured; all cases, killed 685, and injured 13,143. The net decreases are employees killed 98, injured 2649; all cases, killed 174, injured 3,111.

The number of meetings held during the month by general and local safety committees was 2,089; attendance, 31,555; absentees, 5,921. The number of papers read and specific topics discussed aggregated 2,859; illustrative accidents, specifically discussed 4434. Safety rallies held, 189.

With this bulletin the manager of the Section, A. F. Duffy, sends to the safety supervisors copies of resolutions praising the work of the Section which have been adopted by the brotherhoods of conductors, brakemen, firemen and clerks. Among suggestions for improvement which have been received by Mr. Duffy is one that pictures used for interpreting methods of safety, should be those of real persons, not exaggerated imaginary pictures.

**W. H. Moore**, claim agent of the San Diego (Cal.) Electric Railway Company, was elected president of the Pacific Claim Agents' Association at its recent annual convention at Oakland, Cal. Other officers elected were: First vice-president, C. A. Blackburn, Butte, Mont.; second vice-president, J. B. Mills, Oakland; third vice-president, F. B. Oakley, Tacoma, Wash.; secretary-treasurer, D. F. Boynton, Portland, Ore.





The Pennsylvania Lines and the Indianapolis Union Bridges Over South Street

## Extensive Grade Separation Work at Indianapolis

The Improvements Embrace a Four-Track High-Level Line and Additional Station Facilities

IN ORDER TO COMPLY with an order of the City of Indianapolis requiring the elimination of all the street crossings at grade with the tracks in the business section of Indianapolis, Ind., the Indianapolis Union Railroad now has under way one of the most important track elevation projects undertaken in recent years. The improvement will, at the same time, provide adequate facilities for handling the large and rapidly increasing passenger and freight traffic in this city. This project involves all of the six railways having lines in the city and resolves itself into two sections.

The most important part is the work undertaken by the

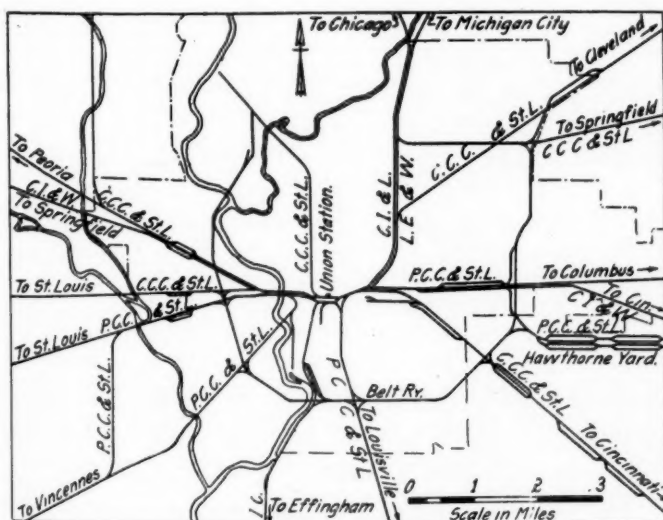
500,000 cu. yd. of embankment and more than 50,000,000 lb. of structural steel. The second part of the project consists in revising the lines of the other railways concerned to conform to the new conditions created by the changes made by the Indianapolis Union.

### The Railroads of Indianapolis

As shown on the map of the city, the lines of six railways enter Indianapolis. Of these roads the Big Four has six divisions, the Chicago, the Peoria and the St. Louis divisions entering the city from the west, and lines from Cleveland, Springfield and Cincinnati from the east. The Pennsylvania has five divisions converging at Indianapolis, consisting of the St. Louis and Vincennes divisions from the west, the Louisville division line from Louisville, Ky., entering from the south, the Columbus division from the east and the Michigan division from Chicago from the north. The Cincinnati, Indianapolis & Western has a line extending from Springfield, Ill., on the west through Indianapolis to Cincinnati on the east and the Chicago, Indianapolis & Louisville, the Illinois Central and the Lake Erie & Western each has one line entering the city.

The Indianapolis Union railway was organized to provide both freight and passenger connections between these various lines. It was first formed in 1850, and in 1883 the present operating agreement was established. It operates a belt line for freight traffic 14 miles long and a passenger line 1.23 miles long. The belt or freight line is located in the outskirts of the city, thus avoiding the necessity of moving freight trains through the busy downtown section, but the passenger line passes through the heart of the business section of the city. All of the passenger lines of the six railways entering Indianapolis converge on this line and all of the passenger traffic into and through the city is handled over it into the Union station, which is also operated by the Indianapolis Union.

Under normal conditions the passenger line handles 87 trains into and 85 trains out of the Union station every 24 hours. The busiest periods are between 10:40 a. m. and noon and between 2 and 3 p. m. Between 10:40 a. m. and 11 o'clock five trains arrive at the station and three depart, while at 3 p. m. four trains depart and two arrive. The



Railroad Connections at Indianapolis

Indianapolis Union itself. This includes the substitution of a four-track, high-level line for the old two-track line at the street grade, eliminating all crossings at grade with the intersecting streets, and improved facilities at the Union passenger station, including a new high level train shed having a track capacity twice that of the old. The estimated cost of this portion of the work exceeds \$8,000,000 and involves 110,000 cu. yd. of excavation, 105,000 cu. yd. of concrete,

Union station furnishes the only passenger terminal facilities in the city and serves as a through station for the Big Four, the Pennsylvania and the Cincinnati, Indianapolis & Western and as a terminal for the Illinois Central, the Monon and the Lake Erie & Western. Prior to Federal control through trains were also operated from Chicago to Cincinnati over the Chicago, Indianapolis & Louisville and the Cincinnati, Indianapolis & Western.

Prior to the present project the grades of the streets and the passenger tracks had been separated at West street and at the joint crossing of Kentucky avenue and Missouri street, in both cases the streets being depressed somewhat and carried under the tracks. An undercrossing at Illinois street had also been provided about 30 years ago and a steel viaduct at Virginia avenue carried the traffic of that street over the tracks, thus leaving grade crossings at Senate, Capitol, Meridian, Pennsylvania, Delaware, Virginia, New Jersey, East, Washington and Noble streets on the main line and at Pennsylvania and South streets on the wye connection to the Louisville division of the Pennsylvania.

The objectives of the improvements undertaken by the Union Railway were (1), the elimination of the crossings at grade with the streets enumerated above; (2), to provide additional line facilities for handling the heavy traffic for which the old two-track line was, and had been for years entirely inadequate, and (3), the provision of amplified station facilities, those of the old station being insufficient to handle satisfactorily the large transfer of mail, express and baggage between the 16 separate divisions converging at the station and between the railroads and the various city post and express offices.

The necessity for this improvement had long been apparent

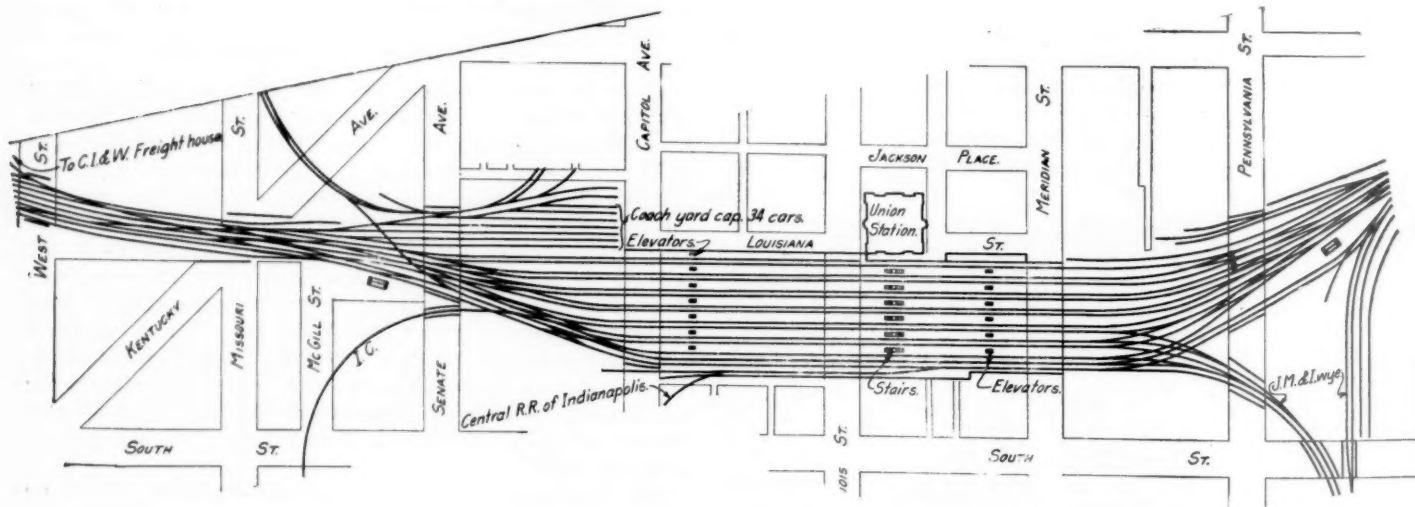
space for waiting rooms, ticket and restaurant facilities, telephone and telegraph, news stands, toilets, etc.

The present elevation work is confined to the district between Missouri street, where the grades had been separated previously and Washington and Noble streets. The plans provide for the closing of New Jersey street across the tracks, restoring Illinois street to its old level, removing the steel viaduct at Virginia avenue and the depression of this street to permit the construction of a subway and the carrying of all other intersecting streets under the tracks by means of subways.

Between Capitol avenue and Meridian street the new train shed extending between these streets will provide the support for the high level tracks. Outside of the train shed limits the general plan for the elevation is to support the track on fills, providing retaining walls where the width of right-of-way is insufficient to permit of slopes.

All of the retaining walls are of concrete and mass section design. The subways consist of steel bridges of trough floor construction supported on concrete abutments also of mass section design.

The first work done on the project was the diversion of Pogues run. Originally this creek flowed in an open channel closely paralleling the tracks in the district east of Meridian street. By its diversion into a double box concrete sewer (each box being 8 ft. high by 18 ft. wide) the old creek bed was made available for the additional right-of-way required through this section. This work was done by the city at a cost of \$1,079,852, part of this cost being borne by the various railroads. Wherever the drain crossed under the location of a subway, foundations for the bridge supports were provided by placing three lines of columns, one on each side of the



Plan of the Station Layout

but had been deferred because of a law, recently amended, which limited the city to an annual expenditure of \$100,000 for grade separation and the impracticability of undertaking the project in other than the comprehensive manner of the present plan, which was impossible under the old law if the municipality were to bear its just proportion of the expense of grade separation.

The amplification of the line facilities is provided for by the construction of two additional main tracks and the grade separation is accomplished by the elevation of the tracks, the grade of the streets remaining unchanged except as herein mentioned. The elevation of the tracks makes it possible to amplify the station facilities by utilizing the space under the new train shed tracks as the site for new baggage, mail, express, milk and other auxiliary station facilities. The present station will remain practically unchanged and it provides

drain and one in the wall between the boxes. The girders resting on the columns spanning the drains were then placed.

### Construction Plan

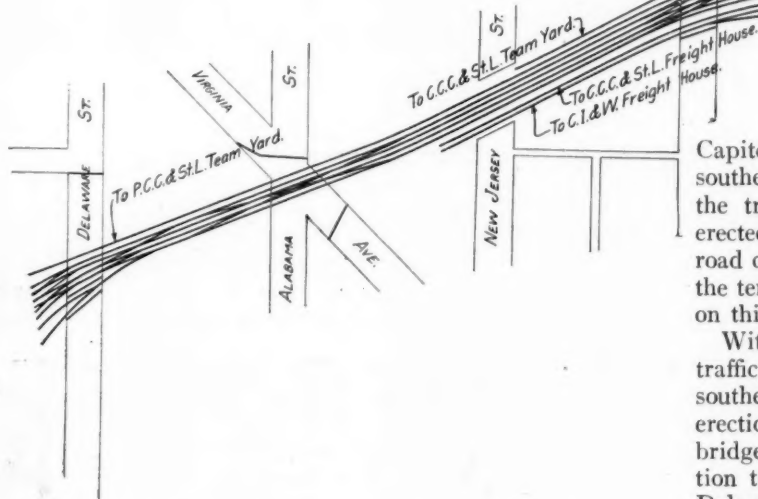
The controlling factor in the construction program for this project was that of handling traffic and all of the work has been so planned as to interfere as little as possible with traffic during construction. After the completion of the Pogues run diversion had made available all of the property owned, work was begun on the construction of the subways at Senate avenue, Capitol avenue and Meridian street, on the train shed which extends between the latter two streets and on the fill west of Capitol avenue, enough of this embankment being placed to permit the construction of a ramp track between the level of the new train shed and that of the tracks at Missouri street.



At this same time the Illinois Central was engaged in the construction of its high level line between the new train shed and Henry street, about one-half mile south of the station, where it joined with previous elevation work thus completing the separation of grades for that railroad. The Illinois Central track was elevated by the construction of a reinforced concrete viaduct built approximately on the location of the old line.

During this period traffic over the Illinois Central was diverted to a temporary line built free of the new work except where it crossed under the new line to permit a connection being made with the low level tracks. This crossing necessitated the leaving of a gap in the viaduct. With the viaduct completed both ways from the gap and a track installed on the train shed connected with the ramp mentioned above to permit the Illinois Central trains to pass from one level to the other, it was only necessary to set in temporary bents to support the rails across the gap in the viaduct to change from low level to high level operation for Illinois Central trains and the ramp between the two levels provided the means for getting these trains into the low level shed until such time as high level platforms and facilities could be completed. This shift was made with no interruption to traffic, leaving the viaduct to be completed when convenient.

With high level facilities provided for the Illinois Central it was possible to continue the filling west of Capitol avenue.



East Approach to the Passenger Station

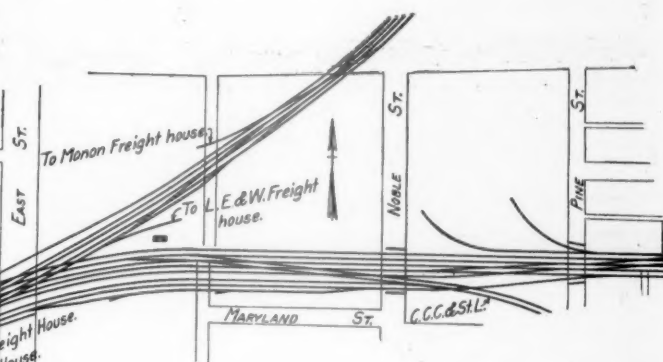
It also relieved the congestion at the low level to an extent and made possible the next step in construction, that of building the high level tracks on the west leg of the wye construction to the Louisville division of the Pennsylvania.

Prior to the present work and in connection with the recently completed Pittsburgh, Cincinnati, Chicago and St. Louis local freight facilities in Indianapolis, the tracks of the Louisville division had already been elevated south of South street. The present work comprised the construction of a high level line between the new train shed and these elevated tracks and included subways at the crossings of Pennsylvania and South streets.

The construction of this high level connection necessitated the wrecking of the boiler plant which furnished the steam for heating the station building and the installation of a new heating system which will be described in connection with the new station facilities. It also necessitated the construction of a temporary low level line over which the high level tracks were carried by means of a pile bridge. With the temporary bridge in place the embankment could be placed without interference with traffic.

This was followed by the construction by the Pennsylvania of a reinforced concrete viaduct south of South street and a steel bridge over South street to carry the tracks of the east leg of the wye and the placing of the fill for the high level tracks. A temporary low level track connection to carry the traffic was again necessary in this work and a run-off was installed between the viaduct and the low level tracks at Delaware street where the low level tracks had been raised about  $7\frac{1}{2}$  ft. under traffic to make this connection possible of operation. A fill was also made to carry two elevated tracks on the main line to the east, from the station running off to the partially elevated grade at Delaware street. These tracks are carried over Pennsylvania street by a temporary pile trestle. With these connections made it was possible to route any train into the station at either level as desired.

In order to interfere as little as possible with the operation of the low level tracks the first work in the district between



Capitol avenue and Meridian street was confined to the southerly limits of the layout, the five southerly panels of the train shed and similar portions of the bridges being erected first. At the same time the track of the Central Railroad of Indianapolis, an industrial line extending south from the terminal, was elevated by means of a steel viaduct, traffic on this line being discontinued during construction.

With the high level connections described above opened to traffic, it was feasible to discontinue service on the most southerly low level track at the station, thus permitting the erection of additional panels of the new train shed and the bridges over Capitol avenue and Meridian street. In addition to the high level connection running down to grade at Delaware street previously described, the only other work so far undertaken on the elevation of the main line east of the train shed, is another high level, single track connection which starts at grade on the main line just east of Virginia avenue, runs to the East and connects with the high level line of the Pittsburgh, Cincinnati, Chicago & St. Louis Railroad at Noble street, being carried over East street on a temporary pile trestle.

### The Structures

The bridges at the various streets are of steel, trough floor type with concrete deck, supported by concrete abutments at the property lines and steel bents of columns and cross girders at the curb lines and center of roadway. All bridge floors are provided with membrane waterproofing.

The Meridian street bridge is somewhat different from the others and is the largest on the line, having a total weight of 3,800,000 lb. It consists of a main span 60 ft. in the clear and two sidewalk spans. The center span consists of forty-two 63-ft. girders, 5 ft. 4 in. in depth, each weighing 26.5 tons. A buckle-plate floor carries the concrete deck.

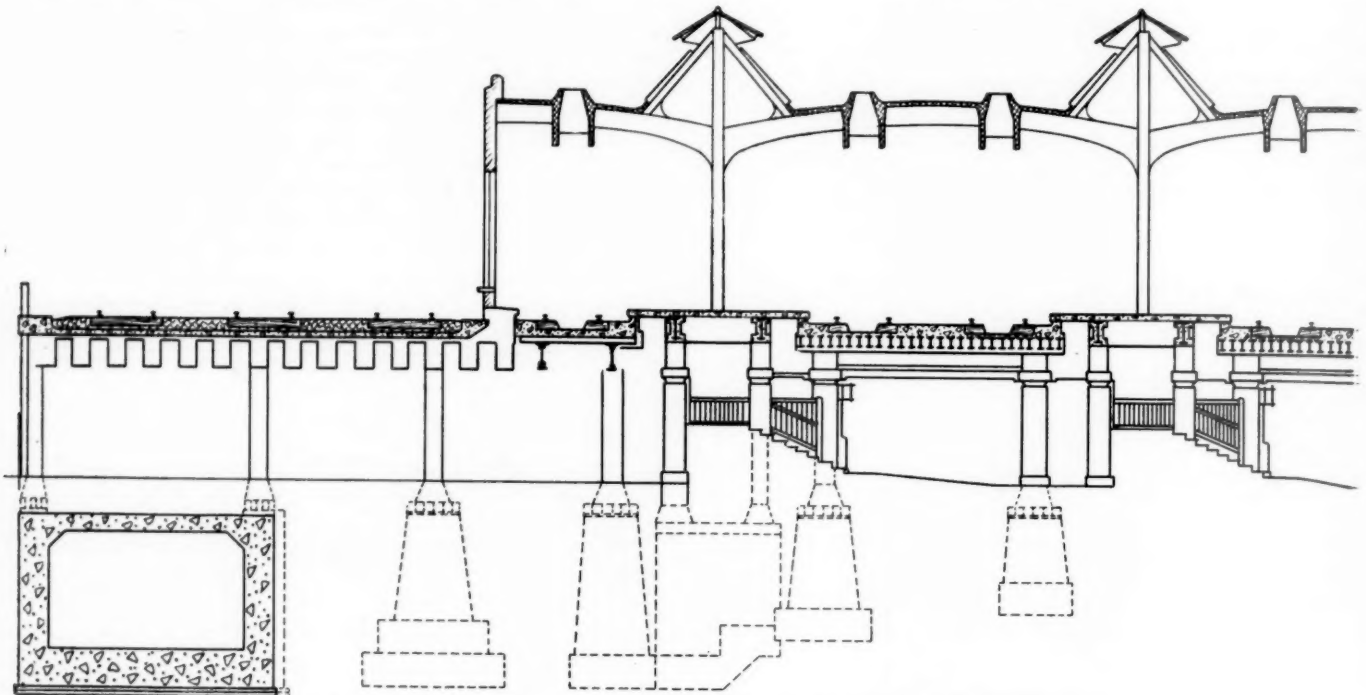
The train shed, which extends between Capitol avenue and Meridian street, provides space on the upper level for 12 passenger tracks with a combined capacity for 203 cars and

for two through freight tracks and a siding for mail, express milk, etc. The freight tracks are located on the southerly panels and are not covered. The passenger tracks are placed in pairs and are spaced 12 ft. 6 in. center to center between concrete platforms 16 ft. 7½ in. in width with the roof supports in the center of the platforms.

The lower level provides the space for station facilities. It

ing platforms and elevators between the two levels are provided in each section.

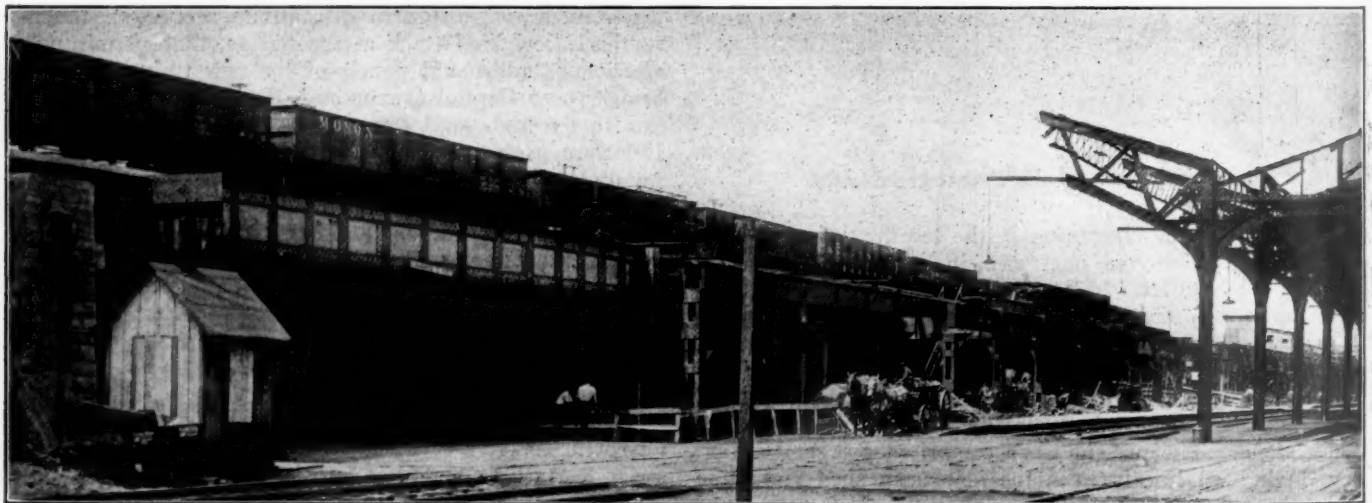
The baggage tunnel is of reinforced concrete construction with the top consisting of encased I-beams under Illinois street on account of limited clearance. The bottom slab is over 3½ ft. thick and acts as an inverted beam for the purpose of transmitting to the soil heavy column loads super-imposed on



A Part Cross-section of the Trainshed and Station Track Layout

includes a passenger concourse located symmetrically with the station building and extending the full width of the shed. Stairs lead from this concourse to each platform at the track level. This low level is divided into two sections by Illinois street which is bordered by drives reaching the various sta-

tion facilities. The walls of the tunnel, this construction being made necessary by the fact that the south wall of the tunnel coincided with the property line. The floor slab on the inclined approaches, independent of the bottom slab, are eight inches in thickness including a two-inch wearing surface. The grades-



View of the Steel Viaduct Carrying the Tracks Through the New Trainshed. The Old Trainshed Is Shown on the Right

tion facilities. A baggage tunnel under Illinois street connects the two sections.

The general baggage room, railway mail, telegraph office, baggage master's office, milk room, lamp room, and the power room for the hydraulic elevators are located in the easterly section of the low level, and the westerly section is devoted to facilities for handling express and United States mail. Load-

on the inclines are easy, all being less than 8 per cent. The artificial lighting in the tunnel is indirect, thus doing away with glare in the faces of truck operators, the electric lights being recessed into the side walls.

The heat for the entire layout including the station, is purchased from the Indianapolis Light & Heat Company, a commercial concern which supplies steam to various down-



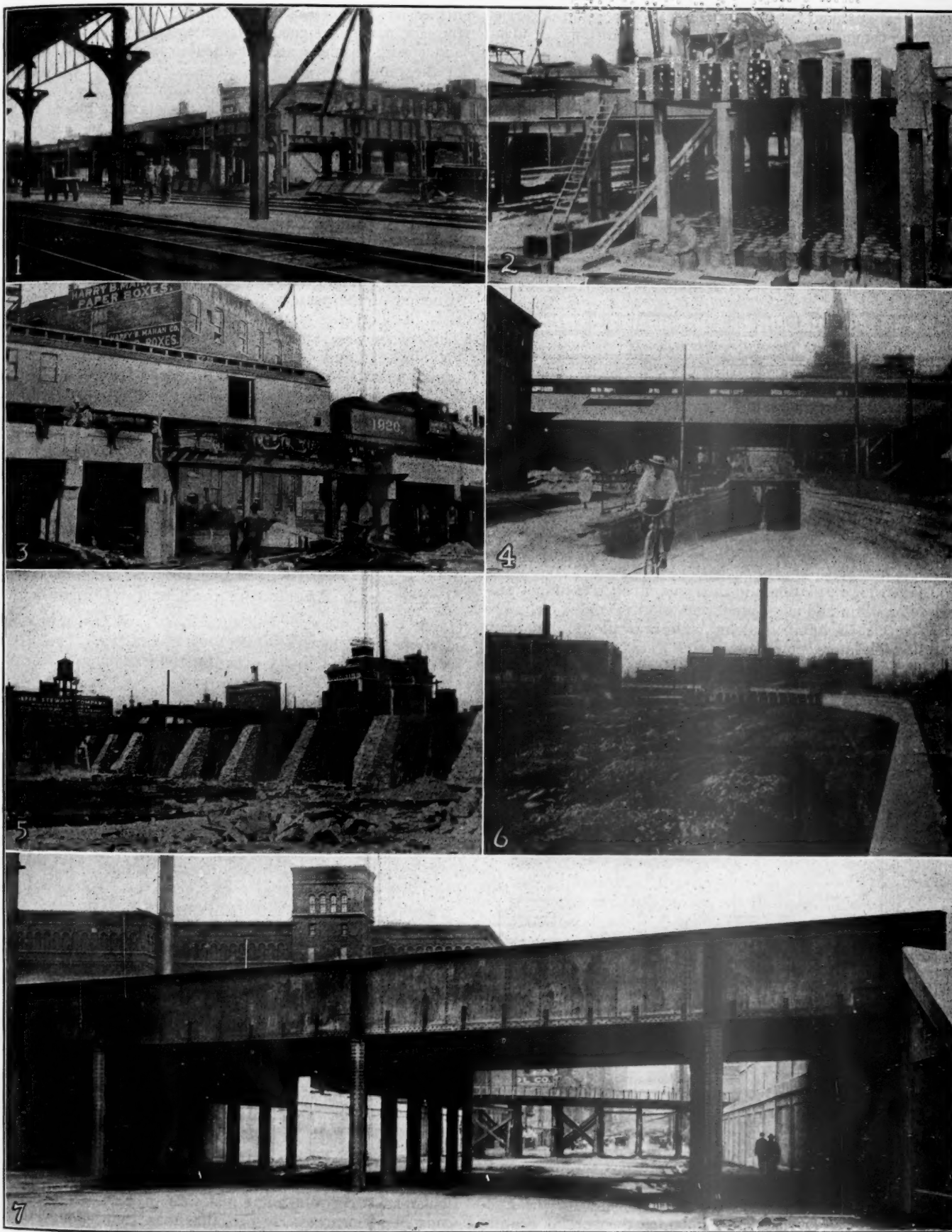
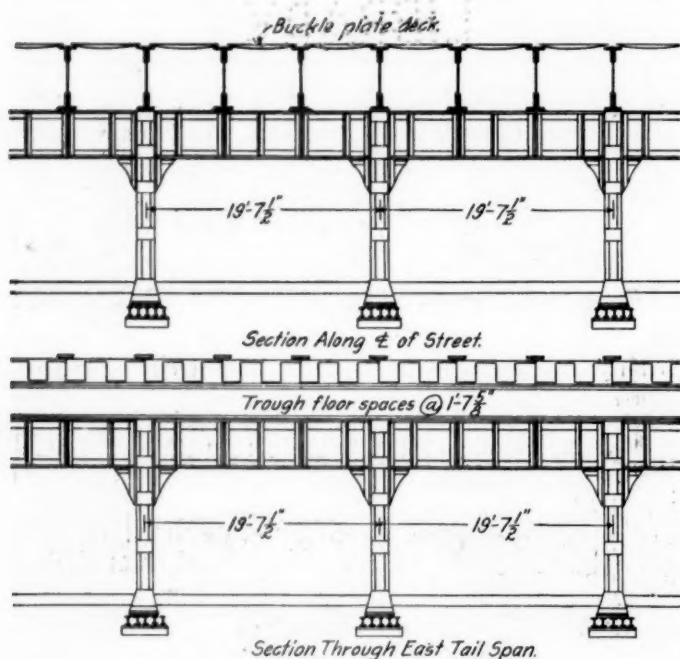


Fig. 1—Erecting the First Section of the New Trainshed. Fig. 2—Methods of Shoring the Trainshed Steel. Fig. 3—The Illinois Central Viaduct. Fig. 4—The Old Tunnel at Illinois Street. Fig. 5—Dry Packing Piers and Waterproofing. Fig. 6—Retaining Wall East of Capitol Avenue. Fig. 7—Indianapolis Union Wye Track Bridge Over Pennsylvania Street.

town buildings in Indianapolis. For this layout a combination of exhaust and live steam is used. The steam is carried from the commercial plant to the station, a distance of about



Typical Subway Construction

900 ft., in log insulation and then into a concrete tunnel provided for steam and other pipe lines, electric cables, etc. The main tunnel is 1500 ft. long with branches to the main building, elevators, power room, etc.

The power room contains the control apparatus for the

side of the shed. These are all of the hydraulic type furnished by the Abell elevator company. The power plant for the elevators is designed to operate six elevators at one time and spring cushions are provided to take up the pulsations of the pumps.

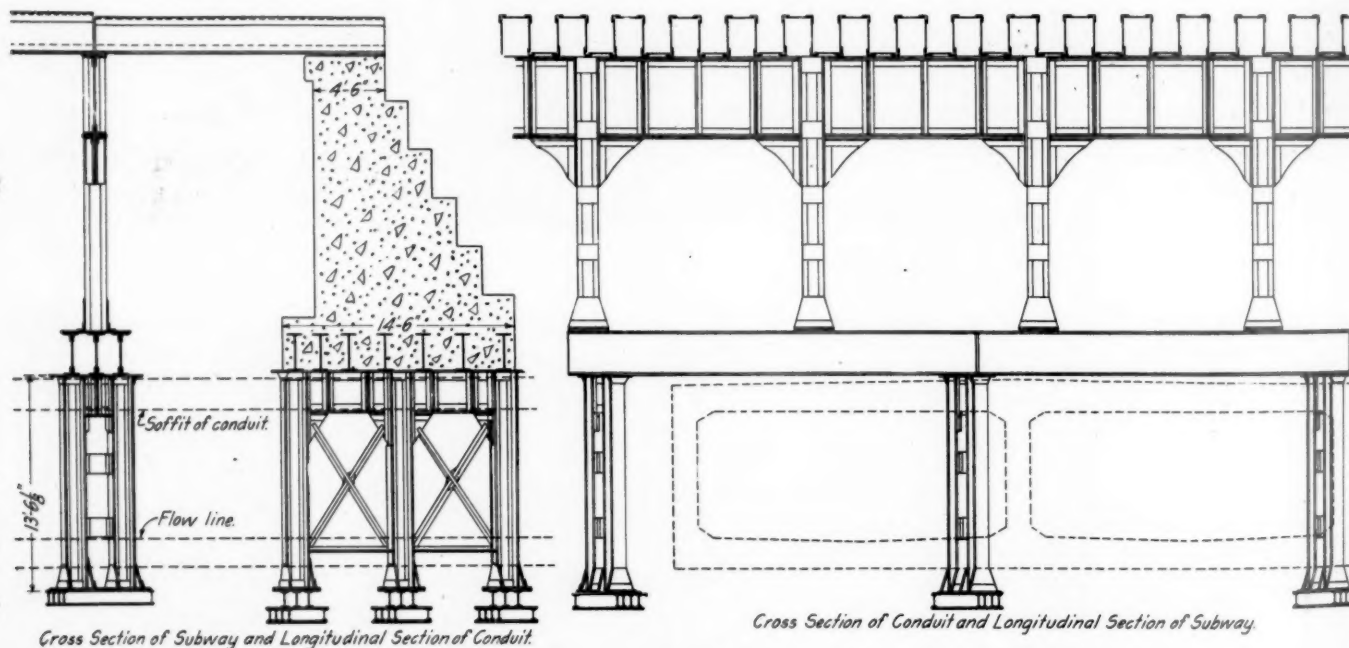
The erection of the steel work supporting the train shed was begun on the east end with the derricks placed on the Meridian street bridge. In placing the steel in that part of the floor of the train shed structure carrying freight tracks, the ends of the troughs were shored up and brought to the proper level by means of jacks.

A ballasted deck floor is provided under the freight tracks. Under the passenger tracks the track structure was applied directly to the concrete floor. Both methods of track construction are shown in the cross-section of the train shed.

New and interesting methods were developed in the construction of the passenger tracks. The track structure consists of short ties with standard screw spike construction. The tracks were assembled on the sub-floor as a base for the blocking and were then swung on a timber structure, consisting of a series of trusses spanning two tracks and extending 106 ft. longitudinally. These trusses were supported on the longitudinal dividing girders provided in the floor and the track was suspended from them by means of clamps and bolts, the bolts allowing for vertical adjustment. The tracks were lined by lining the trusses and when the proper grade and line was secured the finished floor was poured, the concrete being of the proper consistency to be worked thoroughly around and under the ties. Drainage is provided by means of a gutter in the center of each track leading to specially made down leaders provided with grate coverings.

#### Other Roads Affected by the Central Improvement

The new arrangement of the Union Tracks makes necessary extensive changes in the Big Four layout. The present line on its Chicago division east of Indianapolis occupies



Details of the Structural Steel Frame to Carry Subway Over the Pogues Creek Conduit

hydraulic elevators and the main switchboard for the electrical system. The coils and fans for the special heating plant for the concourse are located in a room below the ground floor. The mail, express, baggage room, etc., and the building are heated by direct steam heat with the pipe radiators placed overhead to conserve wall space.

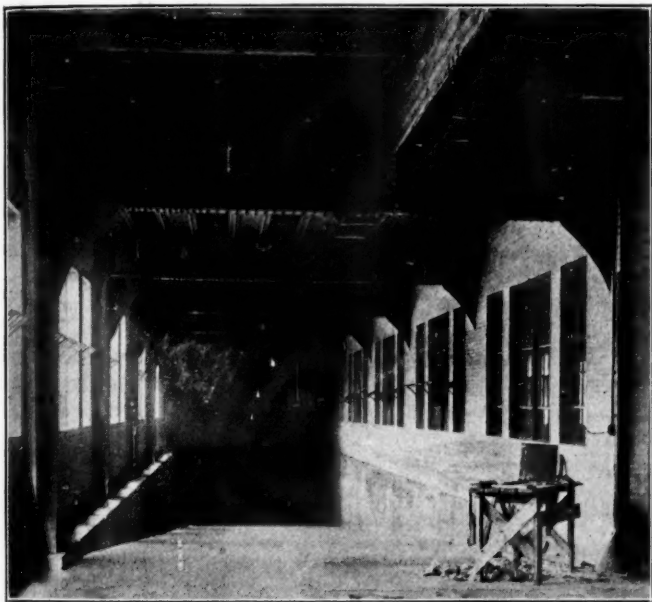
In all, 13 baggage elevators are provided, two in each long platform and one in the west end of the platform on the north

Louisiana street to a point just west of East street and extends in a northwesterly direction to a connection with the Indianapolis Union Tracks at Delaware street. This is a double track line and will be abandoned as a main line, but will be retained in service as a switching lead for industrial and team tracks located at New Jersey and East streets. By abandoning this line as a main line and constructing a new route a satisfactory grade will be obtained on



the ladder track leading into the Big Four freight house, after it crosses Virginia avenue on a bridge adjoining that of the Indianapolis Union Railway. The new route connects with the Union tracks east of Noble street. By this scheme the elevation of the Big Four tracks will be confined to a distance of about 2,000 ft. as contrasted with approximately two miles of elevation work required if the old route were improved, including an additional bridge over Virginia avenue which would have rendered that street less passable. The relocation of the main line made necessary the purchase of considerable additional right-of-way in a residential section of the city, and while the line is to be generally carried on fills, retaining walls will be necessary at intersecting streets and alleys to allow the continuation of street traffic.

The Indianapolis division of the Big Four is affected by the improvement from a point west of the line of East Michigan street extended to an intersection with the tracks. From this point west the tracks will rise on an ascending grade, crossing over Market street and joining the general project at Washington street. In connection with the Indianapolis division work, the Alabama street team yards are to



The Baggage Tunnel Under Illinois Street

be elevated, crossing East street on the elevation and then descending to Alabama street. This is made possible by the closing of New Jersey street.

The Peoria & Eastern, one of the western divisions of the Big Four, is affected by the improvement at Capitol avenue, where a small team yard was elevated. This work is now completed. The changes in the St. Louis division and the Chicago division tracks west of Union Station are minor and confined to a distance of two blocks, where the Big Four owns trackage rights.

The Pittsburgh, Chicago, Cincinnati & St. Louis railroad is affected more than any other road by the elevation of the Union tracks. New inbound and outbound freight houses have been built, fronting respectively along Pennsylvania and Delaware streets and extending south to South street. This work was done in connection with the elevation of the Louisville division. The sites of the old freight houses, north of the Union tracks extending between Pennsylvania street and Virginia avenue will be utilized for elevated team yards. Extensive retaining walls are being built in connection with the latter work. Some elevation work will be required on the Columbus division which will join the elevated Union tracks east of Noble street and run off to present grade east of Cruse street.

The Lake Erie & Western, the Monon and the Cincinnati, Indianapolis & Western are indirectly affected by the improvement, certain rearrangements of local freight facilities being necessary because of the changes made in other lines. The Central Railroad of Indianapolis has elevated its tracks on a steel viaduct for a distance of approximately one-fourth mile to conform to the new arrangement.

The Indianapolis Union project is being carried on under the direction of T. R. Ratcliff, engineer maintenance of way of the Indianapolis Union Railroad at Indianapolis.

### Plumb Plan Propaganda

THE PLUMB PLAN LEAGUE, organized to promote the adoption of the plan for government ownership of the railroads proposed by Glenn E. Plumb, counsel for the organized railroad employees, has embarked on an extensive campaign of propaganda for the plan and to secure members for the league to pay \$1 a year dues. The plan was outlined in a statement before the Senate committee on interstate commerce by Mr. Plumb and has since been put in the form of a bill, with the co-operation of the officers of the railway labor organizations, the Non-Partisan League, the Farmers' National Council and various agricultural and civic bodies. Some of the details of the plan which were not specifically stated before the Senate committee have been made definite in the bill and are described in circulars distributed from the office of the Plumb Plan Lecture Bureau at Washington.

It is provided that the government shall buy the railroads on the basis of the actual number of dollars invested therein, paying for them either in cash or bonds bearing not over 4 per cent interest. Future extensions are to be built at the expense of the territory to be benefited, with such government help as may be deemed proper to be paid for out of railroad income. It is proposed that the railroads shall be operated by a corporation to be known as the National Railways Operating Corporation, without capital other than the operating skill and ability of the directors, officers and employees, who will constitute the corporation. Fifteen directors are to be chosen, one-third by the classified employees by election, one-third by the officers by election, and one-third by the President of the United States. Elected directors are to be subject to recall and appointed directors to removal by the President. It is proposed that the government shall lease to this corporation all railroad properties, to be operated as a single system divided into operating districts, managed by district railway councils representing the board of directors in local matters, and elected one-third by the classified employees within each district, one-third by the official employees, and one-third by the board of directors. The income of the operating corporation is to be applied to operating and maintenance expenses, renewals, interest and sinking fund payments of one per cent for the retirement of the bonds issued to pay for the properties. This, the circular says, "assures the early retirement of the bonds, after which the government will own the railroads free of debt." The net earnings remaining are to be divided equally between the government and the operating corporation and the corporation's half of the profits is to be declared as a dividend upon the amounts paid in wages, every classified employee receiving that proportion of the fund which his annual compensation bears to the total compensation of all classified employees and every official employed receiving that proportion which his annual compensation bears to the total compensation of all official employees, but every employed officer is to receive twice the rate of dividend that is given to the classified employee. The reason for this apparent generosity is explained in the circular, which states that the principal argument offered against the plan is that it would be pos-

sible for the officers and employees to combine and by raising wages absorb all profits so that there would be nothing to be divided between the corporation and the government. The bill proposes to provide against the possibility of such collusion by giving the official employees the double dividend rate on the ground that any increase in the level of wages would immediately wipe out the chance of an extra dividend for the official employees. The circular says their interest can be preserved only by maintaining the fixed wage level allowed the classified employees and obtaining for them the highest possible rate of dividend. The possibility of management and wage earners uniting to raise wages and salaries and thus absorbing profits and perhaps creating a deficit thus wholly disappears, the circular says. Apparently it is not considered necessary to provide such safe-guards against combinations of the employees to raise their own wages without the collusion of the management.

To protect the public from the payment of rates resulting in excessive profits, it is provided that whenever in one year the net profits received by the government shall equal or exceed 5 per cent of the gross operating revenues, the Interstate Commission shall immediately reduce the rates by an amount sufficient to absorb these profits and it is argued that every such reduction in rates will tend to increase the flow of traffic and again restore profits to their former level, again insuring a further reduction in rates.

The board of directors, according to the plan, would create, by negotiation with the employees, not less than three boards of adjustment of not less than eight members each, half from the classified employees coming within the jurisdiction of the several boards, and the other half from the official employees. These boards would decide all questions arising from the interpretation of established wage rates, wage awards, working relations, discipline cases and other disputes between the two classes of employees. Their decisions would be final except that where no majority decision can be obtained an appeal would lie to the board of directors. The board of directors would also create a central bi-partisan board of wages and working conditions to determine matters of salaries, wages, hours and other conditions of employment when brought before it by official and classified employees.

It is stated that over six million American citizens and voters have endorsed the plan. A saving of \$250,000,000 a year is promised as soon as the plan goes into effect.

A million and a half copies of the circulars are being distributed by the league and membership applications are invited, both individual and lodge memberships. Membership buttons are to be given and "all individual members are authorized and expected to greet all fellow members wearing the insignia without further introduction" and all are asked to co-operate in the important task of educating public sentiment to the supreme importance of the plan. The object is to secure the enactment of the Plumb plan bill by Congress. This, the circular says, can only be accomplished by awakening public sentiment and securing public approval and endorsement. "Already Congress is aroused to the gravity of the crisis. Good work has been done in Washington during the present year. The first line trenches have been taken. The Senate and House are alert and watching. Government ownership of railroads has never been tested in this country. In 1918 amid war-time difficulties when Wall Street broke down Washington stepped in. After shifting its load to the government Wall Street continued to exercise its influence in railroad control. Private operation at public expense was the result. Extravagance and economy went hand in hand. Government administration worked wonders but it could not change human nature. Every railroad man knows the facts."

Another circular gives the A. B. C. of the Plumb plan by means of a series of questions and answers. This explains further how it is proposed to save \$250,000,000 a year. For

instance, the circular says, if the entire surplus is \$500,000,000 and this is 10 per cent of the gross operating revenue, the government receives \$250,000,000 and because this is 5 per cent rates are decreased 5 per cent and without new economies or new business the profits the next year would be only \$250,000,000, but decreased rates mean more business and the prospect of a reduction in dividends would stimulate the employees to improve their operation by applying better methods.

Samuel Gompers, president of the American Federation of Labor, is honorary president of the league; A. B. Garretson, ex-president, Order of Railway Conductors, is honorary vice-president; Warren S. Stone, grand chief, Brotherhood of Locomotive Engineers, is president, and the vice-presidents are executive officers of 14 railroad labor organizations.

## Elkhart to Toledo, 7 Cars, 70 Miles an Hour

**E**ASTBOUND EXPRESS TRAIN No. 4, of the New York Central, on Sunday, May 14, being more than an hour behind time, traversed the division from Elkhart, Ind., to Toledo, Ohio, 133.01 miles, in one hour, 54 minutes, or at the rate of 70 miles an hour. From Millersburg, Ind., 18 miles east of Elkhart, to Nasby Tower, about 4 miles short of Toledo, a distance of 111.31 miles, the time was one hour, 27 minutes, equal to 76.76 miles an hour.

The train, in charge of Conductor Cantrick, consisted of 7 steel cars, weighing about 940,900 lbs. The engine, No. 4853, weighs, with its tender, about 250 tons, and it was run by H. Evans. The weather was clear.

This division of the New York Central, is as nearly straight and level, probably, as any road of equal length and importance in the United States, there being one tangent about seventy miles long. The time of the train, as reported by C. V. Cook, is as follows:

Miles from Elkhart	Station	Schedule time	Actual time	Altitude
		a. m.	a. m.	
	Elkhart Station .....	10.40	11.47	764
.15	B Tower, Elkhart .....	.....	11.48	764
10.23	Goshen Tower .....	10.55	12.00	798
18.03	Millersburg .....	11.05	12.08 p.m.	879
25.08	Ligonier .....	11.13	12.14	895
34.91	Brimfield .....	11.24	12.21	932
41.63	Kendallville Tower .....	11.33	12.27	976
48.00	Corunna .....	11.41	12.32	967
54.35	Waterloo Tower .....	11.48	12.37	916
62.26	Butler .....	11.57	12.43½	869
62.89	WB Tower, Butler, Ind. ....	.....	12.44	864
67.84	Edgerton Switch, Ohio .....	12.03 p.m.	12.48	862
79.93	Bryan Tower .....	12.16	12.57	764
92.60	Archbold .....	12.31	1.07	739
100.88	Wauseon Tower .....	12.41	1.13	774
114.58	Swanton .....	12.56	1.24	.....
124.06	Holland .....	1.06	1.31	637
129.34	Nasby Tower .....	1.13	1.35	.....
133.01	Toledo, Union Station .....	1.20	Arr. 1.41	587

Railroads were crossed at Goshen, Kendallville, Waterloo, Butler, Bryan and Wauseon; at the crossing two miles east of Wauseon, and at Nasby Tower. Water was taken from track pans at Grismore, east of Millersburg; at Corunna, and at Stryker, about seven miles east of Bryan.

The principal significance of this record of speed is in the weight of the cars. Equally good time was made over this division, westbound, by the Twentieth Century Limited, sixteen years ago, (May 25, 1903,) but that train had only four cars. On June 8, 1905, a train of the Pennsylvania Lines, Western division, No. 18, eastbound, second section, three cars, was run 50 miles at 79 miles an hour; 100 miles at 77.2 miles an hour; and 200 miles, including two stops, at 71.3 miles an hour. On October 24 of the same year, a Pennsylvania special train of four cars, westbound, weighing 260 tons, was run from Crestline, Ohio, to Clarke Junction, Indiana, 257.4 miles, at 74.55 miles an hour. In this run a distance of 131 miles was covered at 77.81 miles an hour.



# Doings of the United States Railroad Administration

## Railroads Carried 4,276,949 Troops During the First Six Months of 1919—I. C. C. May Figures Issued

WASHINGTON, D. C.

**D**URING the first six months of 1919, the railroads of the United States carried 4,276,949 troops on special and on regular trains. In addition, something like two million officers and enlisted men made railroad trips while on furlough. There were also approximately one million men who traveled to their homes from the camps where they were discharged. The aggregate, therefore, was approximately seven and one-fourth millions of military passengers who, in addition to the civilian passengers, were carried by the railroads from January 1 to June 30, 1919.

The average journey of the troops carried on special trains during that period was 660 miles. For other military passengers the length of the average trip is not available, but it was probably shorter than the average trip on special trains. Assuming that the general average journey was 500 miles, the seven and one-fourth millions of soldiers made approximately 3,625,000,000 passenger miles. While the final figures for June are not yet available it is estimated that the passenger miles of civilian passengers in the six months' period were approximately 17,737,000,000. The addition of the 3,625,000,000 military passenger miles will give an aggregate of approximately 21,362,000,000 passenger miles, an increase of 20 per cent. over the total of civilian traffic alone.

The military traffic during the first six months of 1919 required something like nine millions of train miles, or approximately one hundred million passenger train car miles for the one-way journeys. As in practically all cases the equipment had to be sent light in one direction, either going or returning, these figures should be doubled to express the aggregate transportation demand of our military traffic.

During the first two weeks of July, 160,633 soldiers returned from Europe, practically all of them being moved for long or short distances by railroad. The number arriving during the first week of July in which civilian passenger travel was also unusually high because of the occurrence of the Fourth of July, was 92,084, while the second week of July the number was 68,594.

The extraordinary demand on the passenger carrying equipment of the country explains why the Railroad Administration has not been able to meet all of the requests for excursion trains, and why in some cases the cars on regular passenger trains have been crowded. In the month of June alone the railroads transported 914,314 troops, not including men discharged or on furlough, most of them over relatively long distances, and the totals for July, when they are available, will probably be nearly as large.

As these returned soldiers must be moved long distances from the Atlantic ports to all sections of the United States, the passenger cars assigned to their trains are necessarily withdrawn from regular service for comparatively long periods.

Of the troops carried during the first six months of 1919, 1,642,348 were discharged soldiers who are carried at a rate of approximately 2 cents a mile. The approximately 2,000,000 officers and enlisted men who made railroad trips while on furlough during the first 6 months of 1919, traveled generally on a rate of approximately 1 cent a mile. Land grant reductions applicable to some railroads, particularly in the west, also resulted in some of the regular troop movements being made at less than the standard rate of 3 cents per mile, applicable to civilian travelers.

### The Compensation of the Georgia & Florida

In answer to the charge made by Wade H. Cooper before the Senate committee at the hearing on June 30, that John Skelton Williams, as director of finance of the Railroad Administration had ratified and approved a contract by which the government was required to pay that road "the sum of \$88,000 per year net rental when that road had sustained a net loss of about \$513,000 for the year previous," Mr. Williams has submitted to the Senate committee a letter from Director General Hines showing that the railroad referred to, instead of showing a net loss of about "\$513,000" for 1917, had actually made in 1917, \$105,643 net, and that Mr. Williams had had no part whatsoever in connection with the taking over of that road or the fixing of its rental. The letter is in part as follows:

"You did not have anything to do at any time with the negotiation of the contract which the director general made for the Georgia & Florida Railroad, or with the fixing of the amount of compensation, or any other term of the contract, or with determining whether or not the railroad should be under Federal control at all. From the very outset of the Railroad Administration you made it clear that you did not wish to have anything to do with the matter and your wish was strictly respected.

"I notice that Mr. Cooper's testimony refers to certain deficits with respect to the Georgia & Florida Railroad. The deficits stated by him are altogether different from the figures with which the Railroad Administration had occasion to deal. Under the federal control act the Railroad Administration's starting point in dealing with these questions was the operating income or deficit, i. e., the balance or deficit remaining after deducting from the operating revenues the operating expenses, taxes, car hire, joint facility rents, etc. I state in parallel columns the deficits mentioned by Mr. Cooper and the actual figures of net operating income or deficit with respect to this railroad:

Mr. Cooper's statement of deficits	Net operating income or deficit
1917.....\$518,991	1917 (net operating income)....\$105,643
1916.....557,408	1916 (net operating deficit).....10,472
1915.....636,558	1915 (net operating deficit).....96,862
1914.....461,197	1914 (net operating income)....57,397
1913.....403,234	1913 (net operating income)....33,584
1912.....245,277	1912 (net operating deficit).....13,806

"In conclusion permit me to say that you had no responsibility, either directly or indirectly, by affirmative action or by acquiescence, in dealing with this matter. Other members of the staff, including myself, assumed and discharged the entire responsibility of making the recommendation to the then director general, and he acted upon that recommendation."

### Contracts Executed

The Railroad Administration has executed co-operative short line contracts with the Pelham & Havana and the Delaware Valley.

The Railroad Administration has executed co-operative short line contracts with the Pelham & Havana, the Delaware Valley, the Kentucky & Tennessee, the Augusta Railroad, the Rapid Railroad, the Live Oak, Perry & Gulf, the Tuskegee Railroad and the California & Southern.

### Revenues and Expenses for May

The Interstate Commerce Commission has issued the following compilations, subject to revision, from reports of revenues and expenses of steam roads having operating revenues above \$1,000,000 annually, including 184 Class I roads and 17 switching and terminal companies:

able. In making further comparisons with 1918, it should also be borne in mind that the increased wages for May, 1918, were not charged into operating expenses until subsequent months.

It must also be remembered that the comparison between the five months' periods is substantially affected by the fact

Item	REVENUES AND EXPENSES FOR MAY				Five months ending May 30			
	May		Per mile of road operated		Amount		Per mile of road operated	
	Amount							
	1919	1918	1919	1918	1919	1918	1919	1918
1—Average number miles operated.....	233,469.34	234,153.29	.....	.....	233,441.25	234,100.24	.....	.....
<b>REVENUES—</b>								
	Dollars	Dollars	Dolls.	Dolls.	Dollars	Dollars	Dolls.	Dolls.
2—Freight .....	286,701,098	263,258,643	1,228	1,124	1,328,476,287	1,175,615,721	5,691	5,022
3—Passenger .....	92,574,253	79,172,892	397	338	437,281,231	353,714,334	1,873	1,511
4—Mail .....	4,375,974	4,568,208	19	19	21,485,361	22,659,691	92	97
5—Express .....	9,208,334	10,221,406	40	44	42,748,527	47,170,087	183	201
6—All other transportation.....	10,349,842	10,508,177	44	45	46,929,146	46,084,410	201	197
7—Incidental .....	10,317,945	10,893,336	44	47	51,147,954	46,454,631	219	198
8—Joint facility—Cr. ....	531,016	491,650	2	2	2,723,002	2,267,208	12	10
9—Joint facility—Dr. ....	160,041	152,637	1	1	813,371	679,150	3	3
10—Railway operating revenues.....	413,898,421	378,961,675	1,773	1,618	1,929,978,137	1,693,286,932	8,268	7,233
<b>EXPENSES—</b>								
11—Maintenance of way and structures.....	68,898,116	49,534,025	295	212	304,441,957	220,567,840	1,304	942
12—Maintenance of equipment.....	95,382,142	75,024,766	409	320	476,268,178	356,597,714	2,046	1,523
13—Traffic .....	3,835,421	4,036,362	17	17	18,609,326	22,307,168	80	95
14—Transportation .....	173,540,030	147,010,239	743	628	866,784,855	731,846,937	3,713	3,126
15—Miscellaneous operations .....	3,987,364	3,064,929	17	13	18,572,791	14,613,818	80	63
16—General .....	10,356,021	8,499,554	44	36	51,457,357	42,440,430	221	181
17—Transportation for investment—Cr.....	419,145	591,453	2	2	2,471,397	2,393,694	11	10
18—Railway operating expenses.....	355,579,949	286,578,422	1,523	1,224	1,733,663,067	1,385,980,213	7,427	5,920
19—Net revenue from railway operations.....	58,318,472	92,383,253	250	394	196,315,070	307,306,719	841	1,313
20—Railway tax accruals (excluding "War taxes").....	15,835,371	15,707,920	68	67	77,087,357	75,298,521	330	322
21—Uncollectible railway revenues.....	54,413	40,300	...	...	293,685	250,384	2	1
22—Railway operating income.....	42,428,688	76,635,033	182	327	118,934,028	231,757,814	509	990
23—Equipment rents (Dr. Bal.).....	1,788,975	2,613,951	8	11	7,808,787	11,204,088	33	48
24—Joint facility rents (Dr. Bal.).....	1,177,346	686,597	5	3	5,909,791	5,173,524	25	22
25—Net of items 22, 23 and 24.....	39,462,367	73,334,485	169	313	105,215,450	215,380,202	451	920
26—Ratio of operating expenses to operating rev., per cent.	85.91	75.62	...	...	89.83	81.85	...	...

NOTE.—The average railway operating income corresponding to item No. 22 above for the month of May in the three years 1915, 1916 and 1917, included in the "test" period of three years ended June 30, 1917, was \$351 per mile of line for the United States.

The increase in earnings for the five months period is 14 per cent as compared with 1918. As compared with the corresponding five months of the test period the increase is 41 per cent. The expenses, which increased 25.1 per cent as compared with last year, was 79 per cent higher than for the test period. Maintenance of way and structures shows an increase of 38 per cent over last year but 88 per cent as compared with the test period. Maintenance of equipment increased 33.6 per cent as compared with last year and 98 per cent as compared with the test period. Transportation expenses were 18.4 per cent higher than in 1918, but 74 per cent higher than in the test period.

The Railroad Administration statement regarding the May figures, says that inasmuch as the present rates are considered to be approximately 25 per cent. higher than they were last year, the increase in operating revenues of not more than 98 per cent would seem to indicate that total traffic as expressed in ton miles and passenger miles has fallen off approximately 12 per cent. The falling off in freight traffic alone amounted to 13.5 per cent. This decrease was partially offset by an increase in passenger traffic, the complete figures for which, however, are not yet avail-

that the wage increases for these five months in 1918 could not be included in the accounts until later months, and that the rate increases approximating 25 per cent, which were in effect this year, were not effective during these five months last year.

Thousands of returned soldiers are being put back in their former positions on the Baltimore & Ohio, the Western Maryland, Pennsylvania and other railroads, according to a press despatch from Cumberland, Md. This is one result of the tremendous exodus of foreign railroad men and laborers to their own countries. Foreigners who are said to have moved in large numbers from West Virginia, when that State went "dry," to Pennsylvania and to Maryland have been leaving this country at a high rate for the past month, anticipating country-wide prohibition. They expect to secure lucrative work in their native lands and also have alcoholic stimulants. Six new coal mines have been opened or have resumed work on the Cumberland division of the Baltimore & Ohio, since June 15, increasing the demand for trainmen.



# A Comprehensive Revised Interstate Commerce Law

## Suggestion for Law Which Shall Correlate Laws Passed Since and Including That of 1887

**L.** F. LOREE, president of the Delaware & Hudson, has drawn up a revised Interstate Commerce law which has been sent to legislators and others interested, and which occupies about 95 printed pages. The provisions of the Act of 1887 and subsequent amendments are given in full, with those portions which it is proposed to omit placed in brackets, in italics, and the words which it is proposed to add shown in capitals. In a brief introduction Mr. Loree summarizes his purposes as follows:

"The act to regulate commerce of February 4, 1887, has been so many times amended that it is not possible to determine with certainty what the law now is without recourse to many volumes and much study. For this reason alone, a comprehensive revision and consolidation of the existing law, with the repeal of the original statutes, is desirable.

"Moreover, it is recognized on all hands that the law had become oppressive rather than remedial; that it tends to deprive the public of needed facilities and service and denies to legitimate investors the fair returns to which they are legally and morally entitled.

"The statute here proposed follows the present law as closely as the necessities of the situation permit. It is offered in the hope that proposals based upon 40 years' service, involving personal acquaintance with problems dealt with under many and varied conditions and in many aspects, will prove to be suggestive and helpful.

"It proposes extension of the power of the Interstate Commerce Commission to cover state rates which in any way affect interstate commerce.

"It proposes extension of the power of the Interstate Commerce Commission to labor disputes, requiring that wages and conditions of employment shall be just and reasonable. Employees should be forbidden to conspire to interrupt interstate commerce. Strikes should be permitted only on condition that the dispute must first have been submitted to the Interstate Commerce Commission and, subsequent to its decision (or its failure to decide within six months), there must be a vote to strike, which vote should be by secret ballot on a question defined by the Commission, the taking and counting of the vote being supervised by the Bureau of Interstate Transportation.

"It proposes that the Interstate Commerce Commission shall become wholly an adjudicating body, the terms of office of the commissioners, after the retirement of those now in office, to be extended to nine years; and the division of the country into five interstate commerce regions, following the natural traffic divisions of the United States one commissioner to have his office in each region, leaving three to sit in Washington. Commissioners assigned to regions should perform only such duties as may be devolved upon them by the three remaining in Washington, these three to exercise all the powers of the commission except those thus provided for.

"It proposes that the Interstate Commerce Commission shall be required, as soon as practicable, to fix, either for the United States as a whole or for each interstate commerce region, the percentage by which existing rates ought generally to be increased in order to meet expenses and provide proper revenues. No rates not exceeding the present rates by more than these percentages should be regarded as unreasonable in themselves, but any rate may be condemned in case it is found to produce unjust discrimination. Until these maximum percentages are made effective, the Secretary of the Treasury

should pay to each system surrendered from Federal control the difference between the actual income and the standard return under the federal control act, if the actual income is less.

"It proposes that the power to suspend rates pending investigation should be abolished.

"It proposes to create a Bureau of Interstate Transportation to operate under the direction of a chief, to be designated from among the members of the Interstate Commerce Commission, but this commissioner, during the period of such designation, not to perform any duties as commissioner. This bureau should take over all the executive and administrative functions of the commission.

"It proposes that the Interstate Commerce Commission shall no longer be permitted to institute proceedings of its own volition, but provides that the Bureau of Interstate Transportation, as well as state commissions, trade organizations, individuals, firms and corporations may be complainants before the commission.

"It proposes that carriers shall be given power to exchange passenger transportation for advertising in periodicals. The practice of barter should be recognized to be as legitimate as are cash or credit transactions.

"It proposes to provide for immediate judicial review of findings under the 'Valuation Act.' The law already provides for such review, but does not clearly provide that it may be obtained immediately, and unless this is possible, it might not be obtainable until much of the evidence had disappeared.

"It proposes to repeal the commodities clause, the anti-pooling clause and section 10 of the Clayton Act and that the Sherman anti-trust law shall be made inapplicable to carriers subject to the Interstate Commerce law.

"It proposes that the Secretary of the Treasury shall be authorized to settle and pay claims on account of acts or omissions of federal officers during federal control and an account of just compensation for the use of properties. Many such matters will be left open at the end of federal control and there should be an expeditious method of obtaining just settlement without litigation, similar to that under which the War Department is now empowered to settle claims growing out of orders for munitions, etc. Appeal to the Court of Claims should, however, be allowed in cases in which agreement is found to be impracticable. Provision should also be made for funding of balances due the United States on account of additions and betterments to the properties during the period of federal control. The acceptance of serial notes payable within 15 years and bearing interest at a rate slightly above that which the government paid on the Victory loan would appear to be reasonable.

"It does not propose anything which would increase the number of federal officers and employees or the expense, to the taxpayers, of federal regulation.

"It does propose a restoration of the American concept of healthy competition with private responsibility and private reward, subject to affective means for the prompt correction of any rates which are found to be unreasonable in themselves or unjustly discriminatory. It would establish an impartial tribunal which would exercise powers that are judicial in their essential character and provide a separate executive, administrative and prosecuting agency, available to any interest requiring relief, while giving to the same impartial

tribunal power to determine labor controversies, thus protecting industry against unnecessary interruption of service.

"It does propose a desirable decentralization of regulative power and the prompt and equitable adjustment of claims arising out of federal control."

The bill is drawn in a form with which congressmen are entirely familiar and its comprehensiveness and form are both integral parts of the work. It is impossible, however, to print the bill in full in the *Railway Age* and a summary only, therefore, can be given of how the present laws are revised to accomplish the 11 purposes which Mr. Loree has attempted to accomplish. The following is such a summary:

In section 1-A of the new law the words "and to every employee of any such common carrier or carriers" are added to the original Interstate Commerce Commission Act in order to bring labor disputes within the purview of the law, and in the same section the clause describing an interstate shipment is amended so as to read "from any place in the United States to any other place in the United States;" and the clause excepting intra-state traffic from the jurisdiction of the Interstate Commerce Commission is limited by adding the words "unless in a particular case the Interstate Commerce Commission shall be of the opinion and shall find that the application thereto of the provisions of this act is necessary to prevent undue or unreasonable preference or advantage and to relieve a particular person, company, firm, corporation, or locality, or a particular description of traffic otherwise subject to said provisions, from undue or unreasonable prejudice or disadvantage."

To section 1-B, which defines common carriers, is added, "and the owners of all cars or other rolling stock, whether for passenger or freight, used in interstate commerce," so as to bring the owners of rolling stock clearly within the law.

To section C, which provides that charges for service shall be reasonable, is added the provision that "all rates of wages and hours of service and conditions of employment of all employees engaged in transportation subject to this act shall be just and reasonable \* \* \* and every unjust and unreasonable rate of wages or requirement or condition of employment is prohibited."

A new section, E, is added, which makes it binding on the Interstate Commerce Commission to fix the percentages of increase of present rates which shall meet expenses and provide proper revenues. This section contains the following paragraph:

"Except as hereinbefore provided all rates and charges for any service rendered or to be rendered in the transportation of passengers or property and all classifications of property for transportation and all tariffs, regulations, and practices affecting such transportation lawfully in force 60 days before the end of federal control, as defined in the act entitled 'An Act to Provide for the Operation of Transportation Systems while under Federal Control, for the Just Compensation of their Owners and for Other Purposes' approved March 21, 1918, are hereby declared to be prima facie, reasonable, just and lawful and no common carrier shall be required to reduce or to modify any such rate, charge, classification, regulation or practice unless the Interstate Commerce Commission shall be of the opinion and shall find that such rate, charge, classification, regulation, or practice is in violation of the third section of this act."

To section F, which prohibits passes, etc., is added the following provision:

"Nothing in this act shall be construed to prohibit common carriers from transporting passengers in consideration of the publication of advertisements in periodicals admitted to the mails as second class matter, but such passengers shall be carried only on tickets accounted for at the rates lawfully in force and advertising paid for in this manner shall be charged for at the regular rates of the respective periodicals."

This section is amended so that tariffs shall be filed with the Bureau of Interstate Transportation instead of with the Interstate Commerce Commission, and this section is further amended by the striking out of the so-called commodities clause which forbids a common carrier to transport commodities which it owns in whole or in part, or in which it has an interest direct or indirect.

Section G is so amended as to provide for a complaint being made to the Commission by any person, firm or corporation and striking out the provision limiting the power to make complaint to a shipper or owner of a lateral branch railroad.

Section I is amended so as to provide that complaints may be brought by the Bureau of Interstate Transportation and the provision that the Interstate Commerce Commission can act on its own initiative without complaint is stricken out.

In section 3-B the clause exempting common carriers from being required to give the use of tracks or terminals to other carriers is stricken out and a new clause C is added as follows:

"That it shall be unlawful for any employee, subject to the provisions of this act, to combine with any other employee or employees for the purpose of preventing, interrupting, or impeding, whether by concerted action in ceasing to work or abandoning employment or otherwise, any transportation of persons or property or the operation of any common carrier by railroad or partly by railroad and partly by water when both are used under a common control, management or arrangement for a continuous carriage or shipment, and every contract, combination, or agreement between any two or more persons for the purpose of preventing, interrupting, or impeding, as aforesaid, such transportation or such operation, is hereby declared to be a conspiracy in restraint of interstate commerce and every person who shall make any such contract or enter into any such combination, agreement, or conspiracy, or commit any act in furtherance thereof, shall be deemed guilty of a misdemeanor, and, on conviction thereof, shall be punished by a fine not exceeding \$2,000 or imprisonment for not more than one year or both said punishments in the discretion of the court: Provided, however, that no strike or agreement to strike shall be held to be within the prohibition of this paragraph if, previous to such strike or agreement, the Interstate Commerce Commission has rendered its decision with reference to the matter or matters in dispute or, having had such matters or matters in dispute under consideration for more than six months from the filing of a complaint covering such disputed matter or matters, has not rendered its decision, and if, in addition thereto, previous to such strike or agreement, the parties thereto or a majority of them have voted to strike or to enter into such agreement, the question having first been submitted to them in a form determined by the Interstate Commerce Commission and; provided, further, that it shall be the duty of the Interstate Commerce Commission, on the written request of any party or parties in interest submitted not more than 60 days after the rendering of any opinion involving a dispute as to rates of wages or hours or conditions of employment or service or within 60 days after any such complaint has been before said Interstate Commerce Commission for more than six months without decision, immediately to define and submit for the vote of the employees designated in any such written request, the question whether they will strike or enter into an agreement to strike and thereupon the persons so designated shall be permitted to vote by secret ballot 'Yes' or 'No,' upon the question so defined, and the taking and counting of every such vote shall be under the supervision of the Bureau of Interstate Transportation and the ballots cast shall be counted by the Bureau of Interstate Transportation which shall forthwith announce the result. Any person or persons voting or attempting to vote fraudulently upon any question so submitted or attempting by bribery, intimidation, or other corrupt means to influence the result



thereof or in any way contributing to or participating in any false or fraudulent statement of the results thereof, or disclosing the manner in which any person or persons voted, shall be deemed guilty of a misdemeanor and, upon conviction thereof, shall be punished by a fine of not exceeding \$2,000 or by imprisonment for not more than one year or by both said punishments in the discretion of the court."

In section 5 the anti-pooling clause is stricken out and certain formal changes are made.

Section 11 is amended so as to extend the term of office of Interstate Commerce commissioners from seven years, as provided in the Hepburn law, to nine years, and that one commissioner only should be go out of office at the end of each year and that, "Said commissioners shall be appointed without regard to political affiliations. If at the time of any appointment to fill any vacancy in said commission, there shall be one or more among the Interstate Commerce regions, hereinafter provided for, which is not represented on said commission by a commissioner who at the time of his appointment was entitled to vote for members of the most numerous branch of the legislature in some state or territory lying wholly or partly within such Interstate Commerce region, the appointment shall be made from among the persons so entitled to vote in one of said Interstate Commerce regions. There shall not be at any time among said commissioners more than two commissioners who at the time of their appointment were so entitled to vote within the same Interstate Commerce region, but this provision shall not be construed to compel the retirement of any commissioner now in office during the term for which he has been appointed. All appointments made after the passage of this act shall be from among the persons so qualified that, as soon as practicable, not less than three of said commissioners shall be persons broadly experienced in the financial, engineering, or operating management of extensive railway undertakings, but no person in the employ of or holding any official relation to any common carrier subject to the provisions of this act, or owning stock or bonds thereof, or who is in any manner pecuniarily interested therein, or who, within three years next preceding the date of such appointment has been defeated for election to any office of the United States or of any state or territory or any political subdivision thereof, shall enter upon the duties of or hold such office."

To this section is added the following:

"For the purposes of this act, the United States shall be divided into five regions to be known as Interstate Commerce regions, as follows:

"Interstate Commerce Region No. 1. This region shall include the states of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, West Virginia, Ohio, Indiana and Illinois and the District of Columbia, and the lower peninsula of the state of Michigan.

"Interstate Commerce Region No. 2. This region shall include the states of Virginia, North Carolina, South Carolina, Georgia, Florida, Kentucky, Tennessee, Alabama and Mississippi and that portion of the state of Louisiana which lies east of the Mississippi river.

"Interstate Commerce Region No. 3. This region shall include the states of Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas and Colorado and the northern peninsula of the state of Michigan.

"Interstate Commerce Region No. 4. This region shall include the states of Arkansas, Oklahoma, Texas, New Mexico and Arizona and all that portion of the state of Louisiana not included in region No. 2.

"Interstate Commerce Region No. 5. This region shall include the states of Montana, Wyoming, Utah, Idaho, Washington, Oregon, Nevada and California, and the territories of Alaska and Hawaii."

Section 13 is amended so that the Interstate Commerce Commission shall no longer be empowered to institute complaints for its own adjudication and the Bureau of Interstate Transportation is empowered to make complaints to the commission.

Section 15-A is amended so that the commission is authorized to declare unjust or unreasonable "any rate or rates of wages or hours of service or condition or conditions of employment or service" and to determine and prescribe what shall be just and reasonable, rates of wages, hours of service, etc. Section 15-A is further amended so as to omit the paragraph which gives the Interstate Commerce Commission the right to suspend rates.

Section 15-D is amended by the addition of the following: "And provided further, that in order to prevent or to relieve congestion of freight or facilities which the Bureau of Interstate Transportation shall find to exist or to be threatened, the bureau shall have power to order the movement of any shipment or shipments over such route or routes as it may designate."

Section 17 has added to it the following: "Within 90 days next following the passage of this act, the Interstate Commerce Commission shall designate one member of the commission who shall be and act as chairman of the commission and another member of the commission who shall be and act as chief of the Bureau of Interstate Transportation hereinafter provided for and may, from time to time, change such designations, or either of them, but no person shall act as chairman of the commission, or as chief of the Bureau of Interstate Transportation, for more than five out of any six successive years. The commissioner designated as chief of the Bureau of Interstate Transportation shall not, while so designated or acting, exercise or be authorized to exercise any other authority or power whatsoever as a commissioner or as a member of said commission. Within 90 days next following the passage of this act, the Interstate Commerce Commission shall designate and assign a member of the commission to each of the Interstate Commerce regions provided for in section 11 hereof, and each commissioner so designated shall have his principal office at a convenient place, to be designated by the commission, within the Interstate Commerce region to which he has been assigned, but the Interstate Commerce Commission shall have power from time to time to change these designations. The commissioners not designated or assigned to particular Interstate Commerce regions, but not including the chief of the Bureau of Interstate Transportation, together with the chairman of the commission, shall be authorized and empowered to perform all the acts and duties required by this act to be performed by the commission, except that they may, by general or special order, authorize and require any commissioner assigned to an Interstate Commerce region to exercise any of the powers of the commission, and any act performed by any commissioner, in accordance with any such general or special order, shall have the same force and effect as though performed by the commission; provided, however, that commissioners assigned to Interstate Commerce regions, while so assigned, shall be authorized to participate in the designation of the chairman of the commission, and the chief of the Bureau of Interstate Transportation, and in the designation or assignment of commissioners to particular Interstate Commerce districts, but shall not exercise or be authorized to exercise any other powers except as provided in such general or special order or orders. Every commissioner shall be assigned to an Interstate Commerce region for at least one year during each successive six years. Whenever necessary to facilitate the public business the commission may transfer temporarily and for a stated period, one or more commissioners assigned to particular districts to any other districts. Any one of the commissioners, including the chairman of the commission or otherwise, but not including

the chief of the Bureau of Interstate Transportation, not assigned to particular judicial circuits, shall constitute a quorum to do business. Whenever any matter shall be pending before any commissioner assigned to any particular Interstate Commerce region, and at any stage in any proceeding before such commissioner, the commission may require the entire record in such proceeding to be transmitted forthwith to the principal office of the commission in the District of Columbia and thereupon the record shall be transmitted as directed and the proceeding shall be transferred and shall proceed before the commissioners, including the chairman of the commission, but not including the chief of the Bureau of Interstate Transportation, or any one or more of them, not assigned to particular Interstate Commerce regions, and shall be determined by them and their determination shall be the determination of the commission. Such order for the transfer of any proceeding may be entered at any time before the day fixed for the taking effect of any final order entered therein and the commission may postpone the effective date of any order pending the final determination."

Section 19-B is amended so as to transfer the valuation work from the Interstate Commerce Commission to the Bureau of Interstate Transportation and to provide for an immediate judicial review wherever necessary to protect the property interests affected.

Section 22 is amended so as to provide that "there shall be in the office of the Interstate Commerce Commission a bureau to be called the Bureau of Interstate Transportation which shall be exclusively directed by a member of the Interstate Commerce Commission, designated as hereinbefore provided, who shall be the chief of said bureau and shall perform no other functions as a member of said commission. There shall be in said bureau such clerical and other assistants as may, from time to time, be authorized by Congress. It shall be the province and duty of said bureau to foster, promote and develop the interstate transportation industries of the United States and their efficient, reasonable and proper adaptation to the service and promotion of the interests of the consumers and producers of all articles carried in interstate and foreign commerce, as well as the interests of those who use or desire to use such agencies of interstate transportation for purposes of travel or shipment, and of interstate and foreign trade and commerce."

The remainder of section 22 is amended so as to transfer the executive duties heretofore performed by the commission, such as requiring operating statistics, annual reports, etc., to the Bureau of Interstate Transportation and providing penalties for the violations of the orders of the bureau.

## Orders of Regional Directors

**STANDARD CROSS TIES; SPECIFICATIONS.**—Supplement 18 to Northwestern Regional Purchasing Committee Circular 19 contains diagrams of certain types of ties that will be acceptable under the United States Railroad Administration specification; also some that should be rejected.

**Fire Prevention.**—Northwestern Regional Purchasing Committee Circular 70 contains suggestion for fire prevention around storehouses, lumber yards, etc.

**Waste of Ice.**—Northwestern Regional Purchasing Committee Circular 69 states that there is a serious shortage of ice, that the cost is very high and that every precaution should be exercised to prevent loss and conserve the supply. Ice houses should be examined for leakage, service buildings should be provided with insulation and openings kept closed, careful supervision should be given the issuing of ice to trainmen; ice should be kept under lock and key.

**Routing Instructions, Pocahontas Region.**—Routing Circular 1-A canceling Routing Circular 1 issued by H. P.

Hathaway, Chicago representative of the traffic assistant to the regional director of the Pocahontas region contains routing instructions applying on carload freight originating in the Chicago switching district or in territory west thereof, moving through Chicago or Chicago junctions to the Pocahontas region. These instructions do not apply when in conflict with current embargoes.

**Interchange Records.**—The Northwestern regional director, File 20-1-37, states that since per diem settlements were discontinued a feeling has prevailed that interchange reports, junction records and car records of foreign cars are not of the same relative importance as before. However, the opportunity afforded by reduction of labor in connection with per diem accounts has been utilized by some roads to give special attention to improving all car records and reports. In view of the fact that some form of accounting for car hire will presumably be made effective on or before January 1, 1920, it is important that: (1) Close attention be given to interchange of cars at junction points. (2) The records kept by those handling the cars be accurate to the last degree. (3) Permanent records of car location and movements be maintained in the same complete and accurate manner that would be the case were actual settlements being made for car hire. (4) Careful attention be given to reports to car owners of junction movements of cars. (5) The forces engaged on car accounts be so organized that actual car hire settlements can be undertaken when necessary and on proper notice. It is suggested that a system of checking errors in the records of cars handled at junction points through a system of compiling monthly a statement showing conditions at each point, be instituted.

**Traveling Engineers' Association.**—The Northwestern regional director, file 77-1-100, suggests that where it is deemed advisable, traveling engineers attend the convention of the Traveling Engineers' Association at Chicago commencing Thursday, September 9. Transportation should be furnished to the men attending and reasonable expenses allowed.

**Safety Appliances on Freight Cars.**—The Northwestern regional director in a letter to Northwestern railroads dated July 2, gives orders similar to those issued by the regional director of the Eastern region in Circular 500-92A767 (*Railway Age*, June 6, page 1383).

**Routing Instructions, Eastern Region.**—Circular 71-N gives routing instructions for carload shipments of fresh meat and fish originating in the Chicago district or beyond and moving by way of Chicago or Chicago junctions to destinations in the Eastern region or neutral territory as described in Eastern and Allegheny region Joint Circular 1 of April 7, 1919, including Cincinnati, Ohio, and Louisville, Ky. Circular 74-J, superseding Circular 74-I and Supplement 1 thereto, contains similar routing instructions for perishable freight in carloads. Circular 78-C, superseding Circular 78-B, contains similar routing instructions for other freight (carloads).

**Passenger Cars.**—Order 214 of Southwestern regional director similar to orders issued by the Northwestern regional director, file 119-1-66 (Noted in the *Railway Age* of July 4, page 12).

**Application of Floor Racks to Refrigerator Cars.**—Circular 225 of the Southwestern regional director states that the Division of Capital Expenditures will approve forms for the application of standard floor racks to refrigerator cars not now equipped with such floor racks and which are used for the transportation of perishable freight requiring floor racks for their proper refrigeration, provided such forms are approved by the corporation, with a commitment that it will take care of the finances. This is not to be construed, however, to require application of standard floor racks to cars now equipped with floor racks, except as renewals are required.



# Railway Developments in Foreign Countries

## Export Figures for May Show Large Increases—Britain Faces Reduction of Coal Output

**L**OCOMOTIVES to the value of £10,000 were imported into Australia during the year ending June 30, 1918, as compared with £78,000 in the previous year, and £425,000 in 1913. Also the importations of insulated wire and cable declined from £637,000 in 1913 to £181,000 in 1918.

Glasgow, Scotland, it is reported, has placed an order for 5,000 tons of tramway rails with the United States Steel Products Company, which has promised an earlier delivery than can be guaranteed by Scottish or English firms. The price quoted is £17 9s. per ton, as compared with £19 1s. 3d., the lowest British offer.

The Government of Jamaica, a British Dominion, is to buy 90 cane cars, 40 box cars and 5 locomotives. The Government is seeking to supply these needs with second-hand equipment used by the American military forces in France. In commenting on this order, the London *Times* stated that the manufacturers of railway trucks in England have orders which will take them five years to fill.

### Proposed Railway From Algeciras, Spain, to French Frontier Abandoned

The American embassy at Madrid, Spain, has been informed, says Commerce Reports, that the Spanish Government has abandoned the project of constructing a direct railway from Algeciras to the French frontier. This railway was intended to form a link in the proposed Paris-Dakar line.

### Belgian Railways Bill

The Belgian government has introduced into the chamber a bill placing the management of the railways in the hands of a self-governing body to be known as the National Belgian Railways Administration.

In a memorandum explaining the objects of the bill the government states that the chambers will supervise the activities of the administration and the parliamentary responsibility of the minister of railways will remain unaffected. The bill lays down in broad outline the legal status of the personnel of the administration, who will be in a position similar to that of civil servants. The right of all members of the personnel to unite for the defense of their interests is explicitly recognized, and both the lower employees and the members of the council of administration will have an interest in the results of the working of the railways.

The government asks for a speedy passage for the bill so that the new administration may begin its activities by January 1, 1920.

### Japanese Developing Steel Industry

The American Chamber of Commerce in London understands that a British naval correspondent in Japan foresees the end of Japan's dependence on imported steel from the United States and from Great Britain. The Japanese are said to be exploiting on a large scale the ores which they have discovered in Korea, and to be making extensions of their industries to handle this new source of supply. Ore concessions in China will further increase the Japanese raw material.

This British correspondent predicts not only that Japan

will soon be independent of outside sources of supply, but that in another ten years' time she will be exporting cheap steel to the Pacific markets and even breaking into more distant markets.

The return to lower ocean freight rates together with the development of the Japanese merchant marine, may make it possible for Japan to sell her steel even on the British market.

### Exports of Locomotives in May

The exports of locomotives in May numbering 97, of a total value of \$4,040,551, were nearly double those of April when 55, of a value of \$2,193,168 were exported, and considerably in excess of those of any previous month this year. Italy took over half the May shipments. The figures as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce were as follows:

Countries	Number	Dollars
France .....	4	189,800
Italy .....	45	2,115,000
Canada .....	4	40,656
Costa Rica .....	14	796,600
Guatemala .....	2	2,100
Mexico .....	2	20,188
Cuba .....	1	23,700
Dominican Republic .....	1	16,900
Brazil .....	4	157,000
Chile .....	1	18,650
China .....	3	107,257
Russia in Asia .....	11	495,000
Philippine Islands .....	2	6,500
Belgian Congo .....	4	51,200
Total .....	97	4,040,551

### Exports of Cars in May

The exports of passenger cars and freight cars in May reached totals several times in excess of previous months. The exports of passenger cars totaling 44 at a value of \$960,616, compared with 8 at a value of \$1,913,728 in April, while the exports of freight cars in May totaled 3,008 at a value of \$6,268,078, as compared with 1,005 at a value of only \$1,913,728 in April. Canada took 39 of the 44 passenger cars and the larger number of freight cars were consigned to France. The figures for May as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce are as follows:

Countries	Passenger cars for steam railways		Freight and other cars for steam railways	
	Number	Dollars	Number	Dollars
Denmark .....	1	2,800	2,317	5,022,119
France .....	...	...	450	772,200
Italy .....	...	...	53	75,917
Canada .....	39	937,833	1	947
Honduras .....	...	...	11	10,000
Mexico .....	4	19,983	76	61,895
Cuba .....	...	...	100	325,000
China .....	...	...	...	...
Total .....	44	960,616	3,008	6,268,078

### Locomotive Conditions in England

LONDON, July 1, 1919.

The conditions of the locomotives of the London, Brighton & South Coast Railway, which is considered indicative of the general conditions throughout the country, was made a matter of comment in the London Post of July 1.

It is reported that out of about 600 locomotives there are 166 awaiting repairs. At the same time the traffic conditions of this road has increased from 80,000,000 passengers a year before the war to 100,000,000 passengers a year at the present time, or an increase of 25 per cent. This is being

handled with a 25 per cent reduction in service and a 20 per cent reduction in force. This company released 5,263 men or nearly 33 per cent of its total force for war service, out of which 2,279 have returned. A large number of those who have not as yet come back are men of technical skill, and this is largely responsible for the retarded repairs. Also many of the skilled workmen have left the railroad to go to the ship yards. This is particularly the case with the boilermakers. At the repair shops at Brighton in July, 1914, there were 70 locomotives under repair with only seven awaiting shop. In May of this year there were 107 locomotives under repair with 59 awaiting shop. The situation is so bad that this company has found it necessary to have locomotives repaired in contract shops. One shop promised to repair two engines a month, beginning with January of this year, but as yet none have been delivered. In addition to the shortage of men, a reduction of working hours has accentuated the difficulty. With the present situation the company does not expect to get back to pre-war conditions for at least another twelve months.

There is considerable pressure brought to bear for the reduction in fares, but if this were done, traffic would increase beyond the capacity of the company to handle it. The increase in the cost of wages and materials is more than 50 per cent of pre-war conditions.

#### Exports of Car Wheels and Axles in May

The exports of car wheels and axles in May, totaling \$769,733, were less than in April, but in excess of those in March. Russia in Asia, France and Japan took the greater share of the shipments. The figures as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce are as follows:

Countries	Car wheels and axles. Dollars	Countries	Car wheels and axles. Dollars
France .....	159,972	Columbia .....	5,161
Iceland and Faroe Islands .....	157	Peru .....	10,119
Italy .....	14,276	Uruguay .....	1,100
Norway .....	426	Japanese China .....	43,392
England .....	400	British India .....	840
Canada .....	46,776	Straits Settlements .....	21,900
Panama .....	2,072	Dutch East Indies .....	20,879
Salvador .....	14	Japan .....	154,234
Mexico .....	2,284	Russia in Asia .....	236,794
Jamaica .....	4,096	Australia .....	3,949
Other British West Indies .....	500	Philippine Islands .....	14,017
Cuba .....	9,013	British South Africa .....	840
Dominican Republic .....	56		
Brazil .....	11,566	Total .....	769,733
Chile .....	4,906		

#### Proposed Swedish Ferry Line to England

The Swedish Railway Board, says an article quoted in Commerce Reports, has just submitted a report relative to the establishment of daily connections between Sweden and England, by a steam-ferry line between Goteborg and a harbor on the Humber, either Hull or Immingham.

After discussing the relative advantages of a steam vessel or a steam ferry line, the board decided upon the latter, as a ferry line to the Humber can count on a higher income, as well as lower costs of operation, than an ordinary boat line, if the vessels are of equal size.

As the intention is to construct ferries with four tracks, it would be possible to carry across on every trip 50 cars, corresponding at a low estimate to a yearly cargo of 126,000 tons. As it has been considered necessary, however, to get space for more cargo, the ferries would also be furnished with holds, of 500 tons each. It is intended to take coal from England when there is a lack of cargo. The coal is to be considered as supplementary cargo, as the freight rates must correspond to those of general coal steamers; when higher paying goods are available the coal cargoes will not be accepted.

The ferries are to be seaworthy and comfortably fitted up. They will accommodate 454 passengers.

The transit traffic between England and eastern Europe has also been taken into consideration for the new line. This traffic can probably be developed, as England, through the possibility of sending goods in direct cars to Russia, will have the same advantages that Germany had before. As conditions are now, however, the Railway Board thinks this traffic should not be counted on, but attention concentrated on Swedish traffic requirements with England.

#### Lack of Railroad Facilities

##### Hampers All Eastern Europe

"Transportation is the chief difficulty alike in relief work and reconstruction throughout eastern Europe. Adequate railways in the Balkan states would unlock great natural resources and open up endless possibilities. The next decade in this part of the world must be an era of railroad building if the people are to live and prosper."

This paragraph, quoted from the monthly report of the American Red Cross mission at Bucharest, says a correspondent to the Philadelphia Public Ledger, points out the most serious problem which faces the new governments of the countries of eastern Europe. There are at present fewer than 100 trains in the whole of Rumania and no more than 400 locomotives, counting every available engine—good, bad and indifferent.

The most luxurious train in Rumania today includes one first-class coach and three coaches of a nondescript third-class type. Thousands of men are at work repairing the lines, but their work is hampered by lack of material. Bridges by the score were destroyed during the war by both Rumanians and Germans. These have been repaired in part only. Trains in Rumania creep along at one-third the old-time speed, with peasants and other travelers riding wherever they can find foot room, either on the steps of the coaches, on the couplers or on the roof.

As a rule, about 50 persons are accommodated on the roof of each coach. This is fine enough in fair weather, until the train pulls into a tunnel, when the roof-riders and those on the steps are half asphyxiated by the thick black coal smoke that pours from the locomotive. The locomotives used fuel oil before the war, Rumania being an oil-producing country; but the Germans took away all the oil burners from the engine fire-boxes and the locomotives have to get along now as best they can with whatever fuel is available.

#### Plans for English Channel Train Ferries

The train ferry service that was worked out by the British military authorities between Richborough, England and Calais, France, is going to be followed by a permanent commercial service, if plans of French business men work out as hoped.

Long before the end of the war plans had been completed for the installation of an English Channel ferry for the transport of goods and passenger cars between England and France. The interest centered in this project was largely due to the efforts of Michel Mercurio, the Paris banker, and organizer of the Societe Francaise d'Action Economique, under whose leadership there was formed the Societe Centrale des Ferry Boats. As a first step, this company bought the Inter-Continental Railway Co., Ltd., which had perfected rights for the installation of train ferries between New Haven and Dieppe.

An intensive study has already been made of the opportunities for developing train ferries, both from the engineering and commercial points of view, the Societe Centrale bringing together a consulting council for the purpose.

Beginning with the New Haven-Dieppe ferry, the Societe Centrale has now organized two other undertakings, one of which is known as the North of France and Orient ferry,



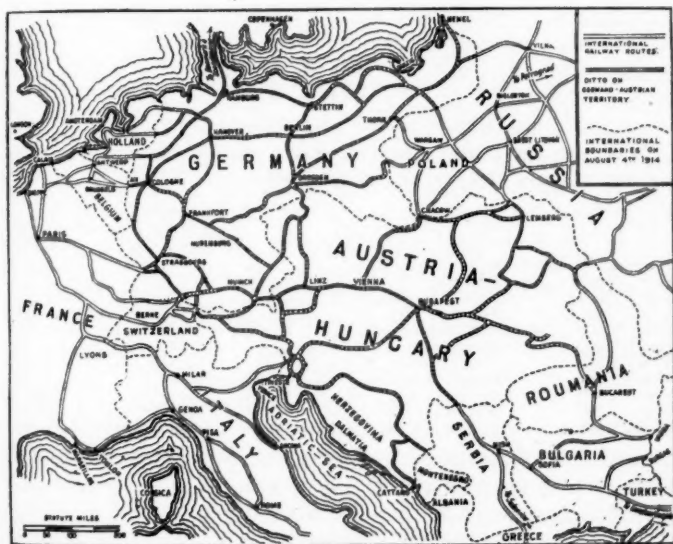
which has the full co-operation of the International Sleeping Car Co., and the approval of the French government, which has already assured a subsidy for the carrying of mails by this route. By this means trains will be operated without change from England to Brindisi and Constantinople.

A third train ferry project, also mothered by the Societe Centrale, will run between Harwich and Ostend. This latter project has already gained the co-operation of the Great Eastern Railway. In Belgium the Harwich-Ostend ferry is actively supported by Monsieur Paul Siegers, late Minister of Marine, and at present holding another portfolio in the Belgian government.

The specification on which tenders have been asked from English shipbuilders call for boats of 21 knots speed, the "utilizable" length of rails on ferry to be 210 meters. This trackage would accommodate 22 freight cars of 20 tons each or 10 freight cars and a train comprising 7 passenger cars of 15 meters in length, and one luggage van. The draught of the boats is not to exceed 4.80 meters.

### Inter-Allied Railway Systems

The map accompanying this article shows in very graphic form the extent to which international transit between Western and Eastern Europe depended before the war on the railway systems of the German and Austro-Hungarian Empires. It was necessary, says the Railway Gazette, London, from a recent issue of which the map is reproduced, to make use of these systems in order to obtain the shortest routes available for such diverse journeys as England to Denmark



Map of Central European Railway Connections in August, 1914, Showing the Pre-war Dependence on German and Austrian Railways

and the Scandinavian Kingdoms; England and France, to Russia, Greece, Turkey, Serbia, Bulgaria and Roumania; Italy to Scandinavia and Russia; and from Scandinavia to the Balkans. But for the war and the resulting check to Germany's near and middle eastern ambitions, this dependence on the railways of the Central Empires would have undergone a very important increase, inasmuch as these railways represented the bulk of the mileage of the only land route to Constantinople, which in its turn is the gateway to the Bagdad Railway, as well as to Egypt, and thus, eventually, to the Cape-to-Cairo route.

In discussing post-war schemes for eliminating this dependence on the German-Austrian railways, it has to be borne in mind that the results of the Peace-Conference are likely

to accentuate the necessity for the creation of Inter-Allied routes, owing to the detachment from the Central Empire and the handing over to Allied nations or those in sympathy with the Allies of such territories as Prussian Poland, Galicia, Bosnia-Herzegovina and the Trentino. A glance at the map will make this position clear, and the situation will be understandable to any newspaper reader who has followed recent discussions in regard to the future of Poland, a country whose economic freedom from Germany is as necessary as its national independence. It will thus be seen that this whole question of new international railway routes is bound up with economic and political problems whose solution is by no means easy and will call for no small measure of international goodwill and co-operation.

The precise "lay-out" of the proposed new Inter-Allied routes, avoiding the former dependence on the Central Empires will, of course, depend on the Peace Conference settlement of new international boundaries. An example is East Prussia, which it is proposed to set up as a German State between Poland and Russia. This arrangement, and the proposed status of Danzig as a free port, will have an obvious bearing on the establishment of new through routes between Russia and Western Europe, and other instances could be cited.

### Britain Faces Reduction of Coal Output

Increased wages of coal miners, shorter hours, reduction of output, discussion concerning the nationalization of coal mines, and increased prices for coal, are leading factors confronting the users of coal in the United Kingdom, and in the countries that have in the past depended upon British coal mines for their fuel.

For America the situation has special importance not only because of the fact that America will probably be called upon to supply a large share of the coal that England will be unable to supply, but also because in many countries coal has become so high in price and hard to obtain that electrification of railways through the use of hydro-electric developments may prove an absolute necessity.

Press despatches from London on July 14 refer to the latest step in the difficulty in the form of the government's desire to increase the price of coal 6 shillings a ton, which, however, was so strongly opposed as to result in a postponement for three months. In seeking to justify the attempted increase, Sir Auckland Geddes, president of the Board of Trade, not only said that the increase was necessary but expressed the fear that the increase might have to be made 9 shillings 2 pence unless England could maintain her output, her markets and her prices for export in the face of American competition in coal and the use of oil. The situation is felt to be serious also in that the increased price of coal may prove a great handicap to industries manufacturing for export trade.

Perhaps the worst feature of the situation is the reduction in output not only because of shorter hours, but also because of decreased output per man. One coal mine owner presented figures at a recent meeting of the National Association of Colliery Managers, at Glasgow, showing that whereas from 1886 to 1914 the production of coal per person in the United Kingdom fell from 315 tons to 252 tons, in the United States from 1886 to 1912 it rose from 400 to 600 tons, and has since advanced to nearer 900 tons. He explained, of course, that this was partly due to the thicker and more accessible seams in America. It is a fact, however, that the output per man which in 1913 was one ton per shift is now only 0.88 tons, while absenteeism has risen to from 10.7 per cent in 1913 to 13 per cent during the past few months.

The British government has now announced that it will put in effect the Sankey award, which was a report of a

Parliamentary committee, called the Coal Industry Commission, headed by Justice Sankey. The award in addition to increasing wages 2 shillings per shift, also calls for a reduction in the hours of labor underground from eight to seven hours effective July 16, 1919, and provides for a further reduction of hours to six, "subject to the economic position of the industry at the end of 1920."

The output of British coal for the 12 months from July 16, 1919, when the 7-hour working day comes into effect, is estimated at between 214,000,000 and 217,000,000 tons, as compared with 287,000,000 tons in the year 1913, says the American Chamber of Commerce in London, quoting the figures announced in the House of Commons by Sir Auckland Geddes after the conference with the Controller of Coal Mines.

In 1913, the British coal production of 287,000,000 tons allowed an exportable surplus of 77,000,000 tons. In 1918, with the war still going on, the production was 230,000,000 tons, of which 34,000,000 were exported. The drop in output to 214,000,000 tons for the coming year, becomes all the more serious, when it is realized that there is no longer any shortage of miners, many thousands having been demobilized and returned to work since the armistice. The outstanding fact is the decline in the production per man.

Even if the amount of coal kept for home consumption is kept down to the amount used last year on a strict rationing basis—196,000,000 tons—the export surplus available will amount only to about 20,000,000 tons. This will have most serious results, the American Chamber in London points out. Not only must Great Britain's continental allies go without the coal for which they almost are entirely dependent upon Great Britain, but Great Britain herself will be tremendously handicapped by the fact that she will no longer be able to rely upon coal, which for years has been her stand-by in foreign trade as a substitute for currency. She will now have to pay for her imports in other goods or sterling. Furthermore, the increase in the price of coal for domestic consumption will increase prices in practically all branches of industry and living. The coal problem affects Britain's entire national life and its world position as a trader. The whole nation is now becoming aroused to its alarming seriousness.

The situation is further complicated by talk of nationalization of the coal industry, but the opposition to that step will no doubt prove very formidable. It is felt on many sides that the government has gone too far already and is truckling to the miner's union.

The threatened shortage of coal in Great Britain is as serious for the countries that formerly secured coal from Great Britain as for the United Kingdom itself. These countries include France, Italy, Sweden, Norway and Spain as well as South America and South Africa. These countries are now paying practically double the price for coal they paid in 1914; and during the war, as has been noted from time to time in the *Railway Age* recently, coal was almost unobtainable and the burning of wood had to be resorted to.

The United States Bureau of Mines in a report issued last week summarizing the investigations of George S. Rice, chief mining engineer of the bureau, explains the situation in the following words:

"In 1913, Great Britain supplied 31,000,000 tons to north Europe, 32,000,000 tons to France and south Europe; that is, 63,000,000 tons to the above named countries, and others, in Europe, in addition to which about 9,000,000 tons was sent to South America; and 5,000,000 tons to other parts of the world."

"If the statements made before the Parliamentary Commission are correct, from the most favorable point of view, as estimated by Sir Richard Redmayne, conditioned on maintaining of war time restrictions on domestic consumption, Great Britain will be able to supply only 23,000,000 tons of coal for export during the coming year, dating from

July 16. If, on the other hand, the domestic consumption was on a pre-war basis, there would be but 7,000,000 tons available. But, on the basis of Sir Redmayne's figures, if all the coal were shipped to western and southern Europe, there would be a deficiency of over 25,000,000 tons without considering the 14,000,000 tons that Great Britain, in 1913, supplied for other parts of the world. There is thus a total deficit of approximately 40,000,000 tons, which if it is to be supplied at all, can be supplied by America only, on the assumption that Westphalia and Belgium are unable to materially increase production for several years. At best, there is evidently a very large amount of coal that the United States could and should supply to relieve the situation in Europe and in South America, now that there is likely to be enough shipping flying the American flag to take care of the business."

## Cost of Freight By Motor Truck

R. E. FULTON, vice-president of the International Motor Company, in a comparison of railway freight charges with motor truck costs, says that he finds that, as compared with first-class freight rates, the motors often have the advantage on distances as great as 100 miles; and he calls attention to factors which often are overlooked. A railroad freight rate of 50 cents means just the bare transportation; it ignores the expense of making the shipment, starting with the boxing or packing cost, and all other expenses incurred until delivery is made to the receiver in good order. In figuring railway freight cost, says Mr. Fulton, there should always be included the first class freight rate plus 15 cents per 100 lb. cartage to freight house, plus 15 cents per 100 lb. to receiver's warehouse, plus 24 cents per 100 lb. increased cost of boxing and to cover increased weight caused by increased boxing.

Without including several other items of expense, he figures out the following comparisons per 100 lb.:

From	To	Approx. distance miles	By railroad freight	By motor truck
Yonkers, N. Y.	New York	14	\$1.04	\$0.20
New York	Newark, N. J.	9	.91	.15
New York	New Brunswick, N. J.	33	.91	.40
New York	Trenton, N. J.	58	.98	.60
New York	Philadelphia, Pa.	90	1.02	.80
New York	Greenwich, Conn.	30	1.02	.63
New York	New Haven, Conn.	75	1.13	.73
New York	Hartford, Conn.	110	1.21	.90
New York	Springfield, Mass.	135	1.25	1.00
New York	Worcester, Mass.	180	1.31	1.50
New York	Boston, Mass.	230	1.36	1.50

Again, it is necessary in practically every case, says Mr. Fulton, to prepare material for freight shipment in a way entirely different from that employed when it is shipped by motor truck direct from shipper to receiver. There is a considerable additional expense for crating, for by motor truck the packages only need protection for loading at shipper's warehouse, in transit without transfer, and unloading at receiver's warehouse. In shipping by motor truck, "a great amount" of clerical work is eliminated. Where extra packing is necessary extra room is required for the boxing department. If railway freight shipments are delayed there is the additional trouble of tracing them. If the shipment arrives in damaged condition there is the further difficulty of collecting from the railroad company. Marshall Field & Company, Chicago, guarantee to make delivery within 50 miles of their store within 24 hours. Boxing often carries from 10 per cent to 20 per cent of its weight in moisture, unless it is kiln dried prior to boxing. The Otis Elevator Company estimates that by the use of motor trucks it saves \$100,000 a year in lumber alone.

Often trucks will do unusual mileage at surprisingly small costs for repairs. The 2-ton Mack operated by M. Mauro, of Plainfield, N. J., has traveled 45,000 miles with practically no expense for repairs.



# Personal Injuries Due to Locomotive Failures

## Suggestions for Their Reduction Based on a Review of I. C. C. Locomotive Inspection Reports

By John L. Mohun

Assistant to Consulting Engineer, Union Pacific System

**B**Y PRESENTING the personal injury accidents, as listed in the several annual reports of the Chief Inspector of Locomotive Boilers to the Interstate Commerce Commission in a comparative graphic form, with an analysis of the cause of the principal locomotive failures which caused these accidents, it seems possible that means may be devised whereby accidents due to such failures may further be reduced.

As these reports emanate from a source independent of the railroads and are national in scope, tendencies toward faulty construction or improper maintenance are naturally more forcibly brought out than in the case of the usual railroad mechanical department reports covering locomotive failures, which are confined to a single or a system of roads. Therefore, all concerned should give serious attention to these reports and the recommendations as to improvements made by the Chief Inspector.

The Federal Locomotive Boiler Inspection Law enacted February 17, 1911, made it unlawful to operate a locomotive with its boiler in an unsafe condition and prescribed rules and regulations for the inspection and test of the boiler. The law further requires the railroads to report to the Interstate Commerce Commission all accidents resulting from locomotive boiler failures or their appurtenances causing serious personal injury or death. The Commission considers a serious injury as one causing the person involved to be incapacitated for more than three days in the aggregate within ten days immediately following the accident. The law also requires the facts concerning such accidents to be investigated by the Chief Inspector of Locomotive Boilers or one of his assistants.

The Congress on March 4, 1915, amended the original Locomotive Boiler Inspection Law by making its provisions apply to the entire locomotive and its tender and all their appurtenances. The features as to reporting and investigating accidents remain the same.

Attention is invited to the charts, which present the personal injury accidents in a comparative graphic form for the years 1912 to 1918, inclusive. As the law at first related solely to the locomotive boiler, Fig. 1 lists the personal injury accidents chargeable to the failure of locomotive boilers and their appurtenances only, for the years 1912 to 1915. As the law was later amended to cover the locomotive and its tender, Fig. 2 covers all personal injury accidents chargeable to the entire locomotive and tender, and their appurtenances, for the years 1916 to 1918 inclusive.

It is obvious that certain tendencies indicated by these charts must be interpreted with reservations, as there are a number of conditions varying from time to time which should be given consideration before drawing definite conclusions, such as the amount of traffic, number of locomotives in service, weather and labor conditions, and the very abnormal state of affairs brought about by the world war in the past few years. However, these charts and the information given in detail, covering individual accidents in the annual reports of the Chief Inspector, bring out certain features in such a pronounced manner that quite definite conclusions can be drawn notwithstanding the effect of these variable conditions.

The predominating feature in Fig. 1 is the consistent re-

duction each year in the total number of accidents, number killed, and number injured. In a majority of cases this is also true of the number of accidents chargeable to the failure of individual parts of the boiler or its appurtenances. Evidently the material falling off in traffic during the years 1912 to 1915 had considerable to do with reducing the number of accidents, but undoubtedly a large amount of this improvement was directly attributable to the rules and regulations governing the inspection and testing of locomotive boilers and their appurtenances, put into effect in 1911 and 1912 by the Division of Locomotive Boiler Inspection of the Interstate Commerce Commission, and the general co-operation of the railroads, locomotive builders and the railway supply companies.

Fig. 2 shows a reverse state of affairs, with the exception of the number killed, in this respect 1918 showing an improvement over 1917.

The increased number of accidents between the years 1915 and 1916 was primarily due to the extension of the law to include the entire locomotive and tender; and the increase each year from 1916 to 1918 no doubt was principally caused by the abnormal condition the railroads were working under during these years, resulting from the war and the severe winter of 1917-1918. It is obvious that even if conditions had been normal during these years the same ratio of reduction in accidents which occurred in the first few years after the Locomotive Boiler Inspection Act went into effect, could hardly have been expected.

The principal accidents causing personal injuries shown by these Charts were due to the failure of the following locomotive parts or their appurtenances:

Boilers, flues, grate shakers, injectors and connections, injector steam pipes, reverse levers, squirt hose, lubricator glasses and water glasses.

### Boilers and Their Appurtenances

Of these items, boiler failures are, of course, the most serious, both in the loss of life and damage to property. Fig. 1 shows a large reduction in the number of boiler explosions from all causes, there being 97 in 1912 as compared with 25 in 1915. Fig. 2 shows just the reverse, there being an increase in the number of boiler explosions from all causes from 41 in 1916 to 90 in 1918.

As will be seen by these charts, boiler explosions due to low water, no contributory cause, fell off fairly constantly from 69 in 1912 to 34 in 1918, but explosions due to low water contributory causes or defects found, increased during the same period from 23 to 51.

The following cases of contributory causes to boiler explosions are taken from the Chief Inspector's reports for the years 1912 to 1918, and a considerable percentage of all boiler explosions disclose similar self-evident defects:

"A bad leak was found in packing nut of top water glass cock; no packing in nut at all, and valve handle was wired to prevent it from being blown out. Union nut in steam pipe to water glass was very loose and had been leaking badly. Such leaks cause water to raise in the glass and show an incorrect water level. These leaks had been reported four times previous to accident."

"Improperly located water glass and gage cocks; lowest reading of water glass one-eighth inch above highest point of crown sheet; bottom gage cock 1 1/4 inches above highest point of crown sheet; locomotive received new fire box nine months before accident and had evidently been operating in this dangerous condition for that length of time."

"Obstruction in bottom water glass fitting; bottom gage cock stopped up

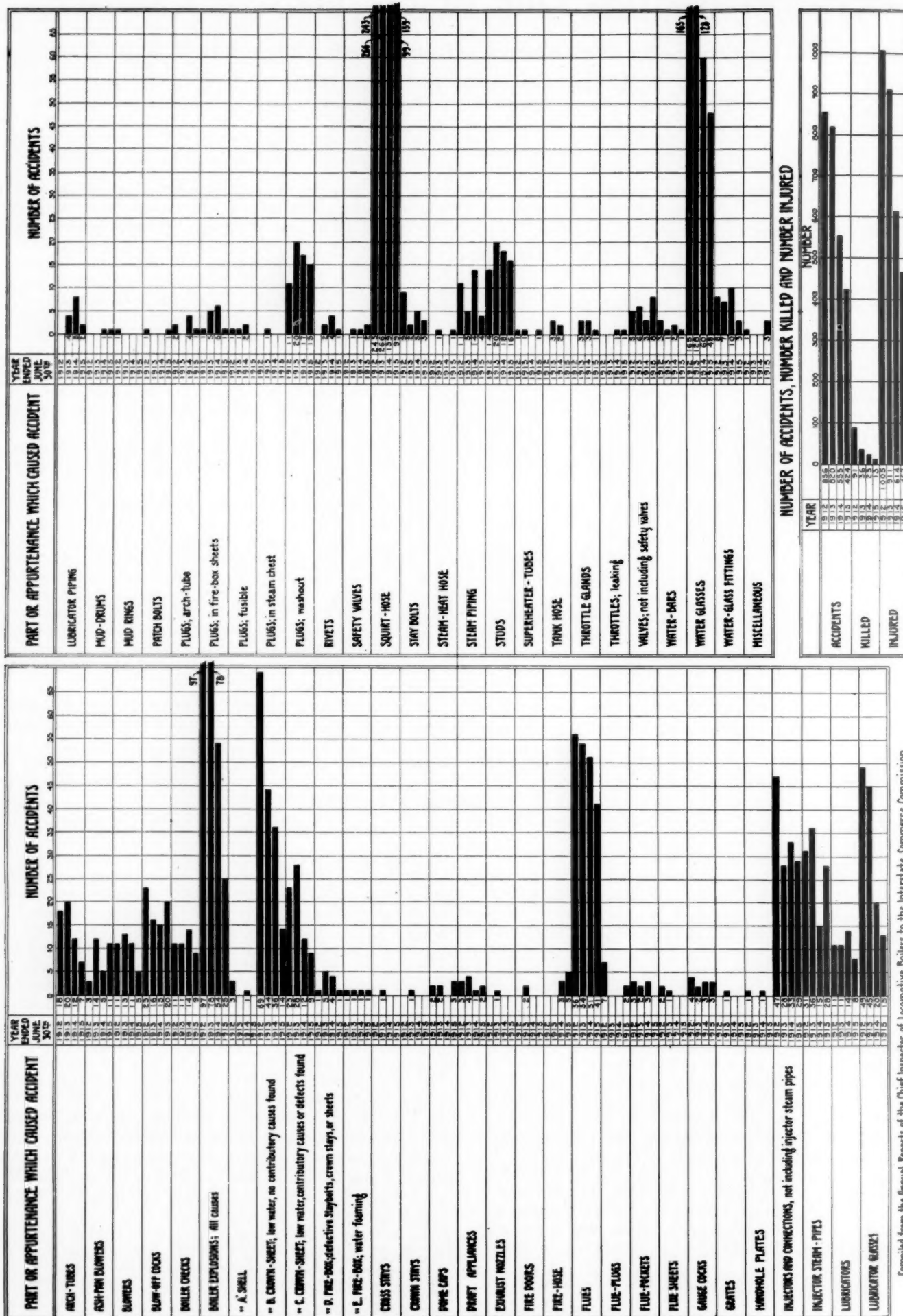


Fig. 1—Personal Injury Accidents Resulting from Failures of Locomotive Boilers and Their Appurtenances—1912 to 1915 Inclusive

Compiled from the Annual Reports of the Chief Inspector of Locomotive Boilers to the Interstate Commerce Commission



with solid scale and inoperative and water glass cocks and three gage cocks not extending through reinforcing plates."

"Both injectors defective; injectors reported 14 times previous to accident."

"The failure occurred along the edge of the longitudinal seam where a crack had formed completely through the plate in several places, and more than half-way through for the entire length of the course. The engineer had reported a leak under the jacket at this point three times immediately prior to the accident."

"Crown bolt heads defective and excessively calked, due to having been overheated some time previous."

"Crown sheet failure, overheated; water foaming badly; reported six times by different engineers prior to accident, but boiler not washed."

"Twelve crown bar braces were defective on account of seven pins missing; four pins broken and one brace broken. Scale was found in the crowfoot holes, where pins should have been, showing that pins had been out for some time."

"Mud ring cracked and leaking badly; reported 18 times, and crown bolts reported leaking badly 16 times within 30 days prior to the accident."

"Opening in fusible plug filled with sediment or slag, rendering it inoperative; report of inspection made three days before accident occurred shows fusible plug removed and cleaned, yet it was found in this condition and had to be cut out of the sheet."

It is realized that quite often locomotive running repairs have to be made from day to day, under the most trying circumstances as to constant demand for and shortage of power, lack of proper facilities, and other unfavorable conditions. These facts should not, however, be considered valid reasons for placing locomotives in service without knowing that such serious defects as those listed above do not exist.

### Boiler Studs

The charts show a yearly average of about fourteen personal injury accidents chargeable to the failure of boiler studs, but the Chief Inspector's reports disclose many times this number found by the district inspectors in a leaky or defective condition. A large number of accidents are shown to be due to studs blowing out on account of improper application, in some cases not more than two or three threads having entered the sheet. A number of accidents were also caused by studs failing, while being tightened, under pressure. The Chief Inspector in his sixth annual report states that studs should not be repaired by calking and under no circumstances should an attempt be made to tighten them while there is steam pressure on the boiler.

An effort should be made to reduce as much as possible the large number of studs now being placed in the boiler for attaching various parts and auxiliary devices, especially when the device produces vibrations or shocks on the studs, such as is the case with air compressors and reverse lever quadrants.

In connection with large Mallet locomotives, several railroads and the Railroad Administration have placed the air compressors on the front of the locomotive and it is believed that this should be followed generally with respect to all large locomotives for the reasons that all boiler studs are dispensed with, the compressors can more readily be looked after by the engine crew when running and as two compressors are usually used on large locomotives, by placing one on each side of the center line an equal weight distribution is obtained. By placing the compressors on the front, instead of on one side of the locomotive, more free air would be passed over the air cylinders when running, thus securing a better cooling effect.

The reports show a number of failures of studs which attach the reverse lever quadrant, undoubtedly due to vibration set up in the reach rod. The use of a power reverse gear wherein the shocks or vibrations are cushioned by the air in the cylinder, would seem to offer means for avoiding this trouble.

There are also a number of minor parts fastened to the boiler by studs which by a little study on the part of the designer, could be avoided; for example, usually two steps are provided in connection with the sand box, requiring altogether four boiler studs. A light ladder could readily be substituted; secured at the top to the base of the sand box, and at the bottom to the running board.

On all of the locomotives recently ordered by the Railroad Administration, with the exception of the switchers, the bell stand is attached to the front end. This is good practice, as

it is not only the logical place for the bell, but all boiler studs for attaching the stand are dispensed with. Such matters as the fastening of sand box steps and bell bases may seem of little moment, but there are many such parts which may be similarly treated to eliminate boiler studs, which taken in the aggregate assume considerable importance.

When a new firebox, back end or an entire boiler is applied to an old locomotive it is generally renewed in kind, with the possible exception of the application of a superheater and a brick arch, and certain improved features of construction developed in the past few years are not usually employed, although such improvements may cost little or nothing. In renewals of this kind where boilers have originally been attached to the frame by means of pads and clamps in connection with which a large number of studs are placed in the firebox sheets, it would seem advisable to substitute furnace bearers or furnace expansion plates attached to the mud ring of the firebox, thus dispensing with the troublesome boiler studs. If the side grate bearers had originally been supported by studs placed in the side sheets of the furnace, it would also seem desirable when renewing a firebox or back end to substitute the more modern method of supporting the grate bearers; that is, by brackets fastened by studs placed in the mud ring, thus further dispensing with boiler studs.

When a firebox, back end or a new boiler is installed, the steam turret and possibly the injectors could be placed outside the cab; thereby reducing the possibility of accidents due to the failure of their steam connections.

### Boiler Washout Plugs

These reports show that quite a number of accidents are caused by boiler washout plugs being tightened while under pressure. After a boiler has been washed, filled with water and fired up, if a washout plug should be found leaking it is a very natural temptation, in order to save time and labor, to attempt to tighten the plug while under pressure. But the very fact that the plug is leaking indicates that the fine threads may have been crossed and it should in no case be touched with a wrench while the boiler is under pressure.

### Arch Tubes

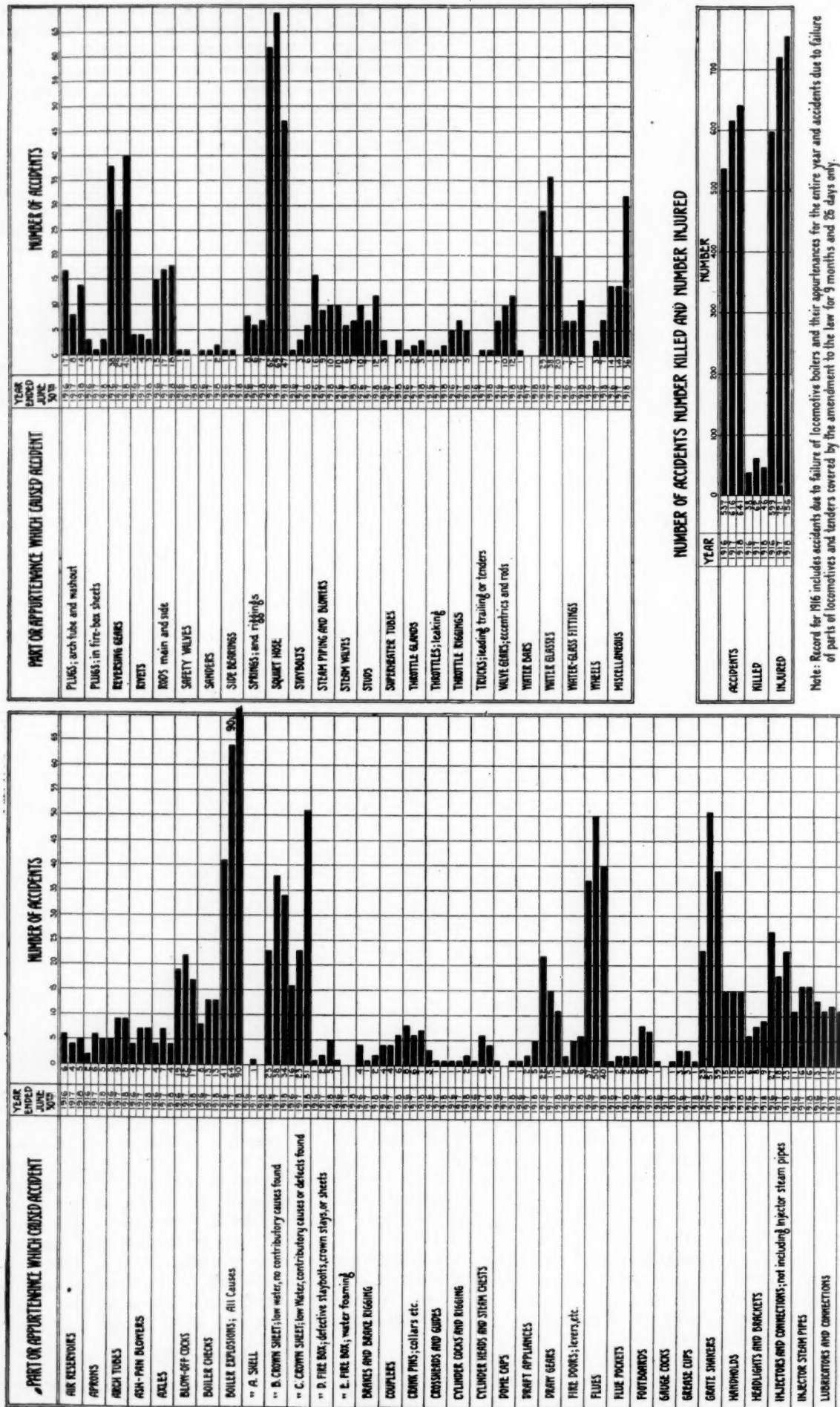
The charts indicate a yearly average of about 11 accidents caused by the failure of arch tubes. The reports show the major number of failures due either to an accumulation of mud within the tubes or faulty setting. In 1912 there were 18, and in 1918 only 9 accidents chargeable to arch tubes. Considering the fact that the number of arch tubes in service increased in this period from approximately 40,000 to 100,000, the showing may be considered a very satisfactory one and indicates that those concerned realize the importance of keeping arch tubes free from obstructions in order to obtain proper circulation through the tubes and thereby prevent them from being burnt.

### Tubes

By referring to the charts it will be noted that personal injury accidents due to the failure of tubes fell off quite consistently from 56 in 1912 to 40 in 1918, most of the failures being due to poor welds; but the reports show a much greater improvement in the number of defective or leaky tubes found by the district inspectors, the decrease being from about 2,270 in 1912 to 565 in 1918. Unquestionably this improvement was largely due to better methods of setting tubes, electric welding of beads, and the rule of the Commission limiting the use of tube plugs and specifying, when they are used, they must be tied together with a rod through the tube.

### Superheater Flues

Only nine accidents are shown by the charts for the years 1912 to 1918, due to the failure of superheater flues, which



Compiled from the Annual Reports of the Chief Inspector of Locomotive Boilers to the Interstate Commerce Commission

Fig. 2—Personal Injury Accidents Resulting from Failures of Locomotives and Tenders and their Appurtenances—1916 to 1918 Inclusive



indicates that these tubes are being well maintained, especially when it is considered that the total number of superheater tubes in service increased from about 125,000 in 1912 to 980,000 in 1918.

### Automatic Fire Doors

In order to reduce as much as possible the serious consequences of firebox, flue, and arch tube failures, the Chief Inspector in his annual report for the year ended June 30, 1917, recommends that all new and all locomotives then in service, when receiving general repairs, be provided with a mechanically operated fire door, so constructed that it is only open when the operator places his foot on the pedal. He further states that with the ordinary swing door, such boiler failures invariably result in blowing the fire door open and discharging steam and boiling water, together with the contents of the firebox, into the cab of the locomotive, seriously or fatally burning persons therein. He also directs attention to the fact that with the automatic fire door, the door will remain closed if the failure occurs while it is closed, and if the failure takes place while it is open, it will automatically close the instant the fireman's foot is removed from the operating device, thus preventing the direct discharge of steam and scalding water into the cab of the locomotive.

From the above it would appear that the automatic fire door is a most important safety device, and its use is well warranted solely for this reason and regardless of its coal saving features, which are generally recognized.

### Grate Shakers

As disclosed by Fig. 2, personal injury accidents chargeable to grate shakers amounted to 23 in 1916; 51 in 1917 and 39 in 1918. Reports show these accidents principally due to improper maintenance of the grate shaker mechanism, such as worn or missing pins and hand shaker bars slipping off staff, due to wear in the socket and the lever stub. The use of steam operated grate shakers should preclude the possibility of such accidents.

As a large number of grate bars on old locomotives are connected by single rods placed on one side of the lug on the grate bars and employ rather small pins, lost motion is soon set up and the whole grate shaker mechanism becomes loose and wobbly and when in this condition is liable to cause an accident.

It would appear advisable in such cases to substitute a more modern method consisting of double connecting rods, one placed on each side of the grate bar lugs with large, substantial pins. This change could be made at a relatively small cost. If it should require a change in, or relocating of, the lugs on the grate bars, this could readily be taken care of at practically no increase in cost, as grate bars have to be renewed constantly. At the same time it might be found expedient to redesign the grates in order to conform to more modern practice, especially as to providing maximum air openings obtainable without the loss of coal, thereby increasing the coal burning efficiency of the grates. This can be done at small cost due, as stated before, to the fact that grates have to be repeatedly replaced.

As coal dust frequently accumulates on the top of the grate lever stubs, the socket of the detachable hand bar should be so arranged that there would be at least one inch clear space between the bottom of the socket and the top of the stub lever when the socket is placed home on the stub. Further, a hole should be drilled through the sides and at the bottom of the socket in order to allow any coal which may have lodged on the top of the lever to fall out.

### Injectors and Connections

The charts show that personal injury accidents chargeable to the failure of injectors and connections (not including injector steam pipes) decreased almost constantly from 47 in

1912 to 23 in 1918 and accidents chargeable to injector steam pipes fell off in the same period from 31 to 16. The reports indicate that practically all of these accidents were due to the union nuts or brazed on collars. Failures of union nuts were due in most cases to threads stripping, nuts too large or broken by the use of improper tools, such as hammer and chisel. A large number of accidents are shown to be due to the failure of union nuts while being tightened under pressure. This is, needless to say, a dangerous undertaking and should be avoided. Failure of the brazed collars and sleeves is generally due to poor brazing. The district inspectors' reports disclose the fact that there were 26,342 injectors and connections found defective in 1913 and that there was practically a consistent reduction to 5,803 in 1918. Even the latter figure seems to indicate a rather bad state of affairs as to the proper maintaining of so important a piece of apparatus, especially in view of the Commission rule requiring the injectors to be tested before each trip.

Undoubtedly the use of non-lift injectors placed outside of the cab, and the so-called "mechanical" pipe joints in place of brazed collars, both of which are now coming into general use, will materially improve conditions in this respect.

### Reverse Levers

Fig. 2 shows that there were 38 accidents in 1916, 29 in 1917 and 40 in 1918 chargeable to the failure of reverse levers.

District inspectors' reports disclose that there were 60 defective levers found in 1916, 380 found in 1917 and 308 in 1918. Practically all of these accidents are shown to be due to the reverse lever slipping out of the quadrant, caused by the worn condition of the teeth of the quadrant or lever latch, defective latch springs or dirt in the quadrant. On account of the incessant vibrations which the valve motion sets up in the reach rod it is very difficult to keep lost motion out of the teeth of the quadrant and reverse lever latch. The writer believes that the most practical way to reduce accidents of this kind is by the use of a power reverse gear in which the vibrations in the reach rod are cushioned and absorbed by the compressed air within the reversing cylinder.

### Squirt Hose

There were 266 personal injury accidents in 1913 due to squirt hose. The number has quite consistently been reduced to 47 in 1918. District inspectors' reports show 3,711 squirt hose or applications found defective in 1913, which was consistently reduced to 511 in 1918. Practically all of these accidents are shown to be due to the squirt hose blowing off, parting at splice or bursting caused by defective hose or clamps. These accidents usually resulted in scalding the fireman, as until recently the water for the squirt was generally taken from the delivery pipe of the injector. Undoubtedly the very satisfactory improvement in the number of accidents chargeable to this device is due to the fact that the attention of all concerned was focused on the large number of accidents caused by such an insignificant piece of apparatus, with the result that a one-piece hose of better quality, sometimes armored, was used and more substantial clamps and attachments generally provided. A considerable amount of credit for this improvement is also due to the several injector manufacturers who have developed squirt hose attachments which deliver water cool enough to be handled safely.

### Lubricator and Water Gage Glasses

Accidents chargeable to the failure or breaking of lubricator glasses fell off quite consistently from 49 in 1912 to 12 in 1918, and those due to the failure of water gage glasses from 165 in 1912 to 20 in 1918. The decided improvement between the years 1912 and 1918 must be largely attributed to the Commission's rule requiring all tubular water and

lubricator glasses to be provided with a suitable shield, although the reports indicate that there are still occurring a number of accidents chargeable to inefficient shields. The more general use of the "bulls-eye" type of lubricators and the "reflex" type of water gage also probably contributed to this improvement; however, the reports show that the glasses in these two devices are failing and causing accidents to a considerable extent.

#### Air Reservoirs

Fig. 2 indicates that there were from four to six accidents each year chargeable to the failure of air reservoirs generally caused by corrosion through the underside of reservoir. In at least one case the material had wasted away until only 1/64 in. remained at the time of bursting. Possibly these reservoirs were old and had not been enameled and baked inside and out, as has been the practice of the air-brake companies for the past several years. However, it would seem that if these reservoirs had received the proper hydrostatic and hammer tests, as prescribed by the rules of the Commission, the thin sheets would have been detected and the accidents avoided.

#### Blow-Off Cocks

The number of accidents chargeable to the failure of blow-off cocks is shown to have been from 15 to 20 each year since 1912 and to have been due to defective threads, cocks, or their operating mechanism. This would seem to indicate that these parts are not being maintained as well as their importance requires. As the cocks which are now generally being used in connection with modern locomotives are of an improved type and of more substantial construction than those formerly used, an improvement in this respect may be looked for in the future.

#### Draw Gears

Personal injury accidents due to the failure of draw gears fell off from 22 in 1916 to 11 in 1918—probably the result of the rigid rules of the Commission governing the proper maintenance of draw gears. These accidents are generally shown to have been due to the pins or holes in the bar being worn, or to flaws or defects in the materials of which they are made. A number of these accidents are also reported as due to excessive lost motion between locomotive and tender and in several cases the safety chains are stated as having been too long. When one of the pins or the draw-bar breaks, the entire shock due to the momentum of the locomotive is taken by the safety chains or safety bars, and on account of the slack which it is necessary to provide in these parts, they generally fail to hold the locomotive and tender together. Naturally the results of such accidents are usually of a serious nature. The type of gear whereby a single heavy safety bar is placed directly under the drawbar and on the center line of the locomotive, thus requiring a very small amount of slack, would seem to offer means whereby accidents of this kind could practically be avoided.

#### General Conclusions

The writer is unable to say to what extent the annual reports of the Chief Inspector are in the hands of mechanical department employees, but all such employees as general foremen of locomotive department, roundhouse foremen, foremen boiler makers and their subforemen should be supplied with them as issued, for the reason that they not only list and classify all accidents, but the cause and circumstances under which they occur are clearly stated. They should also be of considerable value to the several locomotive builders and to all companies furnishing locomotive appliances.

The intelligent interpretation of the causes of these accidents should not only reduce their number, but it should also tend to improve the efficiency of the men and equip-

ment, which is of the utmost importance at the present time on account of the prevailing high cost of labor and material.

The Chief Inspector's reports reveal the fact that personal injury accidents due to the failure of certain locomotive parts are occurring to a much greater extent on some roads than on others, in proportion to the number of locomotives operated by each road and allowing for other varying conditions. This prompts the suggestion that the mechanical department of each railroad check the design, material and maintenance methods of all parts which are shown by these reports to be causing them an excessive number of failures, with the design and maintenance practice of similar parts showing the best performance on locomotives of other roads operating under approximately the same conditions.

When the Congress passed the original Boiler Inspection Law in 1911 it was thought unnecessary by a number of railroad men, and resented by some as an unwarranted interference with their prerogatives, but largely due to the practical manner in which the provisions of the law have been administered by the Division of Locomotive Boiler Inspection under the Interstate Commerce Commission, its beneficial results are now fully recognized and railroad men generally are heartily co-operating with the Commission.

The writer has had roundhouse experience and fully realizes that it is a very simple matter to analyze locomotive accidents and to offer suggestions for their avoidance in the future, in comparison with the very difficult problem of actually maintaining running repairs in a thoroughly practical manner under the quite common conditions of shortage of power and inadequate facilities. He therefore trusts that any criticisms made in this article will be understood in this light, and as having been offered solely as constructive criticism for the possible betterment of the future service.

#### House Committee Begins

#### Railroad Hearings

THE HEARINGS on the general question of the future of the railroads after their return to private management were begun before the House Committee on Interstate and Foreign Commerce on Tuesday, July 15. While the Esch-Pomerene bill to amend the act to regulate commerce is the only bill now before the committee and, therefore, in a way the basis for the hearings, Chairman Esch, of the committee, in a preliminary statement, said that other bills would doubtless be introduced and that the hearing would cover a broad field of inquiry. Because the field is so broad, however, he thought that witnesses in their testimony should keep within it and he suggested that, in view of the widespread sentiment throughout the country against government ownership, much time ought not to be spent on that proposition and, in view of the President's statement that the roads would be returned at the end of the year, it would not be necessary to spend time in discussing the proposed five-year extension of federal control. Representative Sims objected mildly to excluding consideration of an extension of federal control, saying that it had been proposed with the approval of the President. He asked if the chairman had any information that the President had changed his mind. Mr. Esch said he had no information other than the President's statement in a message to Congress that the roads would be returned this year. Mr. Esch said the important problem the committee would have to consider is the matter of railroad credit and rates and the regulation of stock and bond issues. He said there seems to be a general desire to perfect the system of regulation before government ownership is considered and he hoped it would be possible to so perfect the regulatory system as to remove any necessity for government ownership.

Commissioner Clark of the Interstate Commerce Commission was the first witness and it was announced that he



would be followed by the representatives of the United States Chamber of Commerce and later probably by S. Davies Warfield, president of the National Association of Owners of Railway Securities. It was stated that Director General Hines might appear before the committee next week. The principal interests that have proposed plans will also be heard and Mr. Esch said that it is expected the hearing would continue for about a month.

Commissioner Clark referred to previous statements made by the commission with reference to the subject under consideration, including its annual reports, its special report to Congress and its statement before the Senate Committee on Interstate Commerce, and said he would not attempt to discuss the other plans that have been proposed, at least until after they have been presented by their proponents. Therefore he devoted his statement principally to an analysis of the detailed provisions of the Esch bill, which embodies the views of the commission.

This made rather a tame beginning of the consideration of the important subject of the disposition of the railroads. Mr. Clark spent the two morning sessions on Tuesday and Wednesday in going over the details of the bill, giving the reasons for the proposed changes, with very few interruptions by members of the committee. He was to return for

cross-examination on Thursday. In discussing the proposed amendment to Section 5 of the Commerce Act, he said that the shipping public has received absolutely no benefit from the provisions of the Panama Canal Act designed to divorce the railroads from ownership of competing boat lines, because, he said, strict compliance with the purposes of the act would merely result in depriving the shippers of service.

Regarding the provision to allow increased rates to go into effect after a suspension of 120 days, if the commission has not yet reached a decision, Mr. Clark said he would not concede that the commission had been dilatory but that the amendment had been proposed in recognition of the fact that if a carrier proposes rates that are later held to be reasonable it is not exactly fair to suspend them for 10 months.

After he had concluded his discussion of the bill he reverted to the provision he had passed over, requiring the commission, in reaching its conclusion as to the justness and reasonableness of any rate, to "take into consideration the cost of labor and other operating costs in so far as they become material." Chairman Esch remarked that the Traffic Club of Chicago had adopted resolutions urging that the cost of capital be also taken into consideration. Mr. Clark said such an amendment would be entirely appropriate but he could not conceive of the commission ignoring it.

## Some Chapters in Canadian Government Ownership

### Nova Scotia's Experience with Incompetency and Politics on the Provincial Railway, Now Part of the Intercolonial

By Harold G. Villard

#### I

*[This is the first of three articles Mr. Villard has written for the Railway Age regarding Canada's experience with government construction, ownership and management of railways. His material is all based on official reports and parliamentary debates, and is especially interesting at this time when Canada seems to be preparing to engage in government ownership and operation on a very large scale. In future articles Mr. Villard will deal with "Prince Edward Island's Burdensome Railway," "Ontario's Unremunerative Railway"—the Temiskaming & Northern Ontario—and "Disfranchisement of Railway Employees."—Editor.]*

NOVA SCOTIA enjoys the distinction of having been the first of Britain's North American colonies to undertake the construction and operation of a state railway. Toward the middle of the last century Joseph Howe—who has been termed the province's greatest statesman—began to advocate the construction by the government of railway lines across the peninsula, formed by his native land. Asserting that such roads could be built for a very moderate outlay and would prove highly profitable, he eloquently urged state ownership of these proposed highways on the ground that a dangerous private monopoly of transportation and an unfair manipulation of rates could not otherwise be prevented.

Instead of following Howe's counsel, however, the Provincial Legislature in 1853<sup>1</sup> passed an act incorporating a company to build a railway between Halifax and New Brunswick. As the outbreak of the Crimean War rendered it impossible for those willing to engage in such a venture to raise the necessary capital within the six months prescribed by the law, the charter was allowed to lapse. Since no further

hope remained of the projected line being built in the immediate future by a private corporation, the supporters of Government ownership succeeded in putting through a measure<sup>2</sup> at the next session of Parliament authorizing the construction of railways as provincial public works. In order to provide the funds required to build the contemplated main and branch lines, the government was empowered by a subsequent act<sup>3</sup> passed at the same session to issue provincial debentures, bearing 6 per cent interest and payable in twenty years. Not more than \$800,000 of these debentures were to be issued in any one year. It was not realized apparently that the proposed Provincial Railway, which would have to traverse a sparsely settled country, could not be made to pay until connected through to tidewater, and that its speedy completion would have been the wiser policy under the circumstances. The plan actually pursued of building by slow degrees considerably delayed the completion of the road and postponed the time when this state undertaking could reasonably be expected to meet the interest on the money borrowed for its construction.

By the terms of the Railway Act, the completion and management of these intended railways were entrusted to a Chief Engineer and to a Board of Railway Commissioners not to exceed six in number, who were appointed by the cabinet and were removable at any time by the government. While the statute provided that the location of the line should be fixed by the commissioners in conjunction with the Chief Engineer, certain members of the House of Assembly claimed for themselves nevertheless the right of determining where the railroad should be run. Thus, at the 1856 session of Parliament,<sup>4</sup> it was contended in all

<sup>1</sup> Chapter 1, Laws of 1853.

<sup>2</sup> Chapter 2, Laws of 1854.

<sup>3</sup> Chapter 1, Laws of 1854.

<sup>4</sup> Nova Scotia House of Assembly Debates 1856, p. 9, et. seq.

<sup>1</sup> Chapter 1, Laws of 1853.

seriousness that legislators were "best acquainted with the best localities for this great public work and should instruct the ministry accordingly." The House was earnestly urged not to permit itself to be denuded of its power of regulating the route to be chosen. Fortunately, this view of the functions of lawmakers did not prevail, and the railroad commissioners continued as the law clearly intended to direct the location of the line.

As was quite fitting, Howe was made head of the first board which began its labors in April, 1854. None of the commissioners had any practical knowledge of railway building, and construction made slow headway. During the first year only ten miles of the projected main line between Halifax and the Bay of Fundy were contracted for. Apologizing in their first report for the little progress made, the board complained that "they had an engineering staff to organize and constructors and skilled workmen to discover." Nevertheless, the commissioner anticipated having over fifty miles completed by the end of 1856, and announced that the cost of the railway when finished would not exceed £5873<sup>5</sup> per mile, exclusive of depots and equipment.<sup>6</sup>

#### Roseate Predictions Not Fulfilled

These roseate predictions were far from being fulfilled, however, for at the close of 1857 only 22 miles of railway were in operation. The first part of the line from Halifax north traversed a rugged and uneven country, full of rocky gorges and deep bogs, and proved both difficult and expensive to build. Railroad construction costs were further enhanced "by the rise in the price of labor and of all other commodities in the general markets of the world" caused by the Crimean War and the influx of gold from California and Australia. Furthermore, owing to the mistakes of the government engineers, unnecessary expenditures were made at many points. Under these circumstances, it is not surprising that a much greater outlay than was originally estimated was required to complete the Provincial Railway.

When, therefore, a change of government took place in 1857, and Howe's opponents came into office, the Prime Minister of the new administration after a brief period of investigation made this frank confession, concerning the outcome of his predecessor's railway policy:

"In an evil hour for Nova Scotia, the people were deluded into the belief that he (Howe) could construct railways for £5,000 a mile, and that they would be highly profitable and remunerative. Year by year the truth has been gradually breaking upon us, until at last we know that Mr. Howe has misled the public mind on this subject to the extent of nearly half a millions of money—that the road instead of being built for £5,000 a mile, will cost us over £11,000. Enormous as the miscalculation with reference to the cost has proved, I fear that we will not soon be able to realize greater accuracy in the estimation of profits."<sup>7</sup>

With the advent of this new administration, the Board of Railway Commissioners was reconstructed and reduced to a membership of three. An outside engineer, namely, James Laurie, was also appointed to investigate the status and the cost of completing the Provincial Railway. In the written report which he afterwards submitted this official drew a not very flattering picture of the work of the government's engineering staff.

"I consider the engineer department of the road as having been organized on too limited a scale, originating, no doubt, in the laudable desire of economy, but in this it is quite possible to go too far. The force employed has not been sufficient to give the requisite levels and stakes during the progress of the work, and we consequently find at several places the grading out of line—the excavations and embankments too wide and at others not wide enough; improper ballasting used and other matters of detail imperfectly executed. Some of the bogs and lakes which have swallowed up large quantities of material could have been partially or wholly avoided, and no doubt would have been, had proper soundings been taken to determine their depths on the original surveys. The services of one or two well qualified assistant engineers, in addition to those who have been employed on the road, would have saved large expenditures at many points."<sup>8</sup>

<sup>5</sup> £ equals \$4 in Nova Scotia, and \$3.89½ in Canadian currency.

<sup>6</sup> N. S. Journals, 1856, App. No. 4, p. 60.

<sup>7</sup> Hon. J. W. Johnston, Nova Scotia House of Assembly, Debates, 1858, p. 185.

<sup>8</sup> James Laurie, Railway report—Appendix no. 35, N. Scotia Journals, 1858, p. 317.

The inadequate engineering force had not only caused unnecessary expenditures to be made on the road, but had resulted in an underestimation of the quantities of material required to be removed by the contractors. "So far from every care having been taken to insure accuracy in the quantities" as the specifications calling for bids read, it appeared that "no cross sections or proper soundings had been taken." In view of the large discrepancies between the amount of work represented as needed and that actually required to complete the line, the railway contractors asked for extra compensation. They claimed with some justification that they had a right to rely on the soundings made and the quantities estimated by the government engineers. These demands for extra compensation amounted to no inconsiderable sum. While the cost of the road up to September 30, 1857, had been £627,653, the claims for extra allowances actually allowed and in dispute at the close of the same year amounted to no less than £111,000.<sup>9</sup>

Indicative of the general laxity of the government officials, it also appeared that a much larger number of sleepers "had been received and paid for than went into the work." As against 31 miles of completed road in the early part of 1858, there were over 14,000 sleepers "or sufficient to lay seven miles of road"<sup>10</sup> unaccounted for. In view of all these disheartening revelations, the Conservative government—following the presentation of the Laurie report—decided to place its author in charge of railway construction and to remove for incompetency the Chief Engineer whom the Liberals had originally appointed. This change occurred in August, 1858, and was bitterly but unavailingly assailed by Howe and the opposition press, who sought to make a party issue out of it.

Under the direction of the new engineer, the Provincial Railway attained completion. The close of 1858 witnessed the finishing of the main line to Truro, while the Windsor branch had been opened to traffic in the previous June. In the following October, the Chief Engineer at the request of the government submitted a written report on the management of the railway. This throws an interesting light on the manner in which the Provincial Railway had been constructed and operated under the Conservative regime and that of the preceding administration. Concerning the letting of contracts and the purchase of supplies, he had this to say:

"On the Nova Scotia Railway many agreements are made without proper specifications of the work to be performed. \* \* \* For want of proper specifications also, many things, when delivered, are found not suitable or adapted to the road; thus, side tipping cars are ordered without plans or specifications, and come not suitable to the material or purposes intended. Snow ploughs come too wide for the platforms, and can not pass over the road until they are altered; switches, also, but come imperfect and for a different size of rail than in use on the Nova Scotia railway."<sup>11</sup>

In place of contractors being exclusively subject to the orders or under the control of the Chief Engineer, "which is the common and usual course in railroad construction," it appeared that the Railway Commissioners had "carried on communications directly with the contractors."

"The result was a mass of conflicting agreements, counter demands and allowances, but neither energy in the management nor the progress in the construction of the works. \* \* \* The right claimed and used, on the part of commissioners to give directions to inferior officers, contractors and employees, independent of those over them is fatal to all systems of management, and at once leads to confusion and antagonism. The instant an intermediate officer is passed over, and directions given to those under him, he ceases to have control or responsibility."<sup>12</sup>

At the close of 1859 when its construction had been completed, the cost of the Nova Scotia Railway, which then comprised 93.8 miles of main and branch lines, was officially reported at \$4,197,602.79,<sup>13</sup> or at the rate of \$44,760 per mile. These figures include the amount paid by the Province

<sup>9</sup> Laurie's report before cited at p. 286.

<sup>10</sup> Ibid., at p. 285.

<sup>11</sup> Laurie's letter of Oct. 3rd, 1859, N. Scotia Journals, 1860, Appendix, p. 100.

<sup>12</sup> Laurie's letter before cited at p. 98.

<sup>13</sup> N. Scotia Journals, 1861, Appendix No. 4, p. 21.



on the various sums borrowed for railway construction purposes during the four and one-half years required to complete this comparatively short road. Except in a few instances, they exclude all sums paid for right of way and for damages to property caused by the building of the railway. The act authorizing the construction of the road provided that such damages should "form a county charge, to be assessed, apportioned and paid for, according to the relative benefits derived from the railway by the several sections of the country"<sup>14</sup> traversed by the new artery of communication.

### High Cost Due to Faulty Contracts

In the opinion of Mr. (later Sir) Sandford Fleming, who was one of Canada's foremost railway engineers, the high cost of the Nova Scotia Railway was in a large measure due to the awarding of lump sum contracts for its construction instead of paying "by the quantity and measurement" for all work actually done. According to the very stringent specifications contained in these contracts, a lump sum was to be paid per mile of completed road and "no claim for extra work" was to be allowed "for any real or supposed inaccuracy" in the quantities estimated to be contained in each cutting or embankment.

"Yet, when the contracts came to be closed, every contractor had his claim for extras on the very point of quantities which he had expressly engaged to risk. Irrespective of large amounts paid for extras by the Board of Commissioners, further claims were made and pressed. The government and the legislature, relying on the terms of the contracts, fought off these claims for a year or two, but in the end, both government and legislature had to succumb, after an infinite amount of trouble and agitation, and the contracts, let by lump, had in the end to be paid for by measure.

"This system proved an utter failure in Nova Scotia, and notwithstanding that every precaution was taken in framing the contracts, it resulted in the construction of a very indifferent and unfinished road, with many perishable and now unsafe structures; in some cases even the masonry has already fallen into ruins. The system further resulted in the ruin of the Chief Engineer, an honest and estimable gentleman, the withdrawal of public confidence from the commissioners; it broke up one government, led to the destruction of another, and the work, although never properly completed, cost the province a very large sum for extras, and nearly double the amount of the original estimate."<sup>15</sup>

The statement of Chief Engineer Fleming that the Provincial Railway—notwithstanding its high cost—was very imperfectly built—cannot be deemed overdrawn. At the time the Nova Scotia Railway was under construction rails of a T pattern were almost universally being used in the United States. Instead of choosing this same form, which required no chair plate under the ends of the rail, the mistake was made of modeling the superstructure after that in vogue on the railways of Great Britain. Except for fourteen miles of its length, the Provincial Railway was laid with rails of the H pattern weighing 63 pounds to the yard. These were supported at intervals of 2½ feet by ponderous cast iron chairs or fastenings weighing from 29 to 37 pounds each. Wooden side keys were used to secure the rails to the chairs. While this system was found to answer well in the comparatively mild climate of Great Britain, the wide variations in temperature experienced made it both unsuitable and unsafe for the northern portion of the American continent.

Under the great heat of the summer and the marked cold of the winter months, the wooden keys employed shrank and worked loose. To replace and tighten them entailed therefore much additional labor and expenditure. As for the chairs, they had to be constantly wedged up and broke easily whenever a heavy frost occurred.

"In the month of February, a searching thaw occurred which was succeeded by one of the coldest nights of the season. The ensuing morning exhibited the permanent way greatly disturbed and racked. Several thousand joint chairs, a quantity equal probably to the entire breakage since the opening of the road, were destroyed by a single night's frost."<sup>16</sup>

In the words of Nova Scotia's last railway commissioner,

<sup>14</sup> Laurie's Railway report, 1858, before cited, p. 305.  
<sup>15</sup> Letter of Chief Engineer Fleming, Dominion Sess. Papers, 1870, App. A, p. 13.  
<sup>16</sup> Report Railway Commissioner for N. Scotia—Dominion Sessional Papers 1869, No. 4, p. 131.

the rails and fastenings originally placed on the Provincial Railway "were probably the worst that could have been adopted in this (Nova Scotian) climate."<sup>17</sup> Furthermore, as their upkeep was very expensive and as they cost one-fifth more than the better suited American rail and appendages,<sup>18</sup> good business judgment demanded their prompt elimination from the government's road both in the interest of safety and of economy. Yet, although Mr. Laurie had called their attention as far back as 1858 to the unsatisfactory nature of the superstructure used, the unprogressive government officials failed to make any change. It was not until after the road had passed into the possession of the Dominion in 1867 that the "cumbersome, expensive and ill-adapted" chairs began to be discarded and the steel scab-board joint substituted in their place.<sup>19</sup>

Despite the fact that it was of the broad gage of 5 feet and 6 inches, the Nova Scotia Railway had altogether inadequate and poorly drained embankments and cuttings. Through an unwise economy, the openings of the culverts were frequently too small.<sup>20</sup> In many instances, the embankments were less than the specified width of 18 feet. The slopes of the earth cuttings were originally 1½ horizontal to 1 perpendicular and were too high to permit of an economical operation of the road. Owing to the peculiar qualities of the clay soil, these slopes became undermined from the action of the frost and rain and would slip. These slips occurred every spring and fall and filled up the drains alongside of the track with a mass of material, which had all to be removed in order to maintain the road in operation.

"The absence of a thorough system of drainage and the severe action of the frost, all tend to cause slipping in nearly every clay cutting on the line. In some instances, the slopes have run so much that the original slopes of 1½ to 1, are now reduced to three and four to one."<sup>21</sup>

As was to be expected under these circumstances, the Provincial Railway proved expensive to maintain. At the same time, its gross earnings were very meagre and totaled less than \$10,000 a month for the first few years. The road had no station in Halifax itself, but stopped at Richmond on the outskirts of the city. This lack of a terminal in the provincial capital affected unfavorably both the freight and passenger earnings.

"To make the railway already built properly available and adaptable to the wants of the public, the extension into the city becomes a necessity. People are not prone to avail themselves of a convenience by which they are only partially accommodated; farmers within a certain distance often preferring to drive their own teams between their respective homes and the city, to being obliged to transport them to Richmond in order to haul their produce from thence to Halifax."<sup>22</sup>

"The (railway) freight has also been subject to heavy charges for cartage between the city and Richmond, a distance of from two to three miles. The cost of this cartage on heavy freight is a serious item, and as regards the coal traffic, it is prohibitory. Shippers encounter the risks and delays of sending coal by water rather than pay the costly item of cartage. We believe that similar considerations have great weight in determining the route of other freight, which, but for this, would pass over the railway."<sup>23</sup>

Although recommended as of pressing importance in 1861, this so urgently needed extension into Halifax was not opened to traffic until October 2, 1876.<sup>24</sup> Every impartial critic must admit that the government railway officials showed great inertia and dilatoriness in carrying out this highly essential improvement.

The freight rates on the Nova Scotia Railway were appreciably lower than those prevailing in other parts of Canada.

"In order to develop business and bring as much as possible on the railway, the Nova Scotia freight tariff has been put, especially as regards

<sup>17</sup> Railway Commissioner's Report—N. Scotia Journal's 1862, App. No. 20, p. 2.

<sup>18</sup> Laurie's report before cited, p. 312.

<sup>19</sup> Report R'way. Commissioner for N. Scotia, Dom. Sessional Papers 1869, p. 130.

<sup>20</sup> Chief Eng. Laurie's Report—N. Scotia Journals 1860, App. p. 407.

<sup>21</sup> Report Engineer H. F. Perley—N. Scotia Journals 1864, App. No. 1, p. 1.

<sup>22</sup> Report Engineer A. L. Light, N. Scotia Journals 1861, App. No. 24, p. 5.

<sup>23</sup> Report Carvell Investigating Commission, Dom. Sess. Papers 1869, No. 8, p. 170.

<sup>24</sup> Dom. Sess. Papers 1878, No. 7, App. p. 167.

agricultural produce and articles of general consumption, about 20 per cent. lower than tariffs in the adjacent Provinces."<sup>25</sup>

These freight rates were not prepared according to a fixed plan and were not always published.

"All these (freight) rates have come gradually into use and are the result of precedents rather than of principles. It is desirable in all cases, but especially in a railway worked by the government, that the tariffs should be computed on some principle of general application so that as far as possible, special rates may be avoided and it is above all important that every rate should be published. It is only by pursuing this course that the imputation of favoritism can be avoided."<sup>26</sup>

#### Freight Rates Totally Inadequate

In some cases, the freight rates were totally inadequate to cover the cost of the service rendered. This was especially true of the important horse and wagon traffic, which at first yielded nearly one-fourth of the annual freight earnings.<sup>27</sup> While discouraged elsewhere because unremunerative, it grew to large proportions in Nova Scotia through the desire of the authorities to assist farmers seeking to market their produce in Halifax. Instead of being obliged to unload and to ship the contents of their vehicles as freight, countrymen were permitted to board trains with their horses and wagons. The rates charged for this service were entirely too low, and 30 per cent less than in New Brunswick.<sup>28</sup>

"This (horse and wagon) business is conducted at a loss to the department, besides being a source of detention to the trains, and cannot at all times be provided for at Way Stations without a large supply of plant. I consider the tariff on this traffic must be increased in order to make it self-sustaining."<sup>29</sup>

At intervals, the railway commissioners expressed their minds freely in regard to this undesirable and unprofitable form of traffic.

"Under the Tariff Regulations which have been in operation for years, a horse, wagon and driver are carried over the lines at the same rate charged for a passenger. \* \* \* There is neither reason nor justice in this arrangement, and as it is attended with serious loss to the Department, it ought to be at once abolished. \* \* \* No valid excuse can be urged in favor of encouraging persons to encumber the cars with horses and wagons, for the carriage of which little or nothing is received."<sup>30</sup>

"In 1866, the number of teamsters carried free amounted to 11,420 (out of 160,953 total passengers transported). If these concessions could be confined to those seeking a market for their produce, it would not be so objectionable; but a great many persons travelling thus merely for convenience or pleasure took advantage of it. For instance, a person is desirous of going into the country a distance of 10 or 20 miles beyond or from some point on the railway, and as it virtually cost him nothing to take his horse and wagon along, he naturally does so. If his be the only horse and wagon to be carried, a box car and a flat car must be added to the train, and a few shillings in many cases is all that is obtained in the way of compensation, although \$1,500 worth of rolling stock, to say nothing about the additional motive power required, is put into requisition for his special accommodation. It is a matter of surprise that even such an arrangement should have been made and it is equally strange that it should have been tolerated so long."<sup>31</sup>

Although this horse and wagon traffic was carried at a loss, the provincial authorities—perhaps for fear of alienating the farming interest—never had the courage either to raise the rates charged for or to do away with it. Not until some years after the Nova Scotia Railway had passed into the possession of the Dominion government was it finally abolished.

Completed as before stated in 1858, the Provincial Railway in the following year failed to earn its operating expenses by \$8,397.31.<sup>32</sup> In February, 1860, another change of government took place. The new administration abolished the Board of Railway Commissioners and placed the government road under the charge of a single commissioner. One of the first acts of this new official was to remove a railway employee who had had the temerity "to appear at the hustings to poll his vote against the Attorney-General."<sup>33</sup>

<sup>25</sup> Report R'way Superintendent—N. Scotia Journals 1860, Appendix, p. 411.

<sup>26</sup> Report Carvell Commission before cited at p. 165.

<sup>27</sup> N. Scotia Journals 1862, App. No. 20, p. 3.

<sup>28</sup> R'way Report—N. Scotia Journals 1859, App. No. 13, at p. 185.

<sup>29</sup> Report of R'way Sup. Taylor—N. Scotia Journals 1868, Appendix No. 1, at p. 44.

<sup>30</sup> R'way Commissioner Longley's Report—N. Scotia Journals 1867, Appendix No. 11, at p. 3.

<sup>31</sup> R'way Commissioner Longley's Report—N. Scotia Journals 1868, App. No. 1, p. 4.

<sup>32</sup> N. Scotia Journals 1860, App. p. 405.

<sup>33</sup> N. Scotia Journals 1860, App. p. 135.

Shortly afterwards he dismissed the superintendent appointed by the former administration for inefficiency and on the ground of "the necessity of having as government employees parties who are not acting hostile to the department or the government in whose employ they are, and with whose confidence they are supposed to be entrusted."<sup>34</sup>

#### Maintenance of Way Let to Contractors

In order to make the railway pay its way, its new head felt obliged to reduce expenditure "promptly within the narrowest limits compatible with the safe working of the road." As one means of securing this desired end, he conceived the novel idea that a great saving could be effected if the maintenance of the permanent way were let out to outside contractors instead of being looked after by the railway officials themselves as heretofore. To cite his own words:

"The upholding of the permanent way is a very large item of expenditure on every line of railway. \* \* \* I was impressed with the belief that if the road were put up to tender and contract for upholding, leaving contractors to find their own men and tools, the work might be more efficiently performed."<sup>35</sup>

Accordingly, the railway commissioner drew up specifications and contracts "of the most stringent character," and which appeared "to embrace all the conditions and stipulations necessary to insure an efficient upholding of the road,"<sup>36</sup> and from August 1, 1860, on let out to contractors the maintenance of the permanent way and the fencing of the whole line in sections varying from  $4\frac{1}{2}$  to  $11\frac{3}{4}$  miles in length.

At the same time, he sold to the contractors all the tools belonging to the railway department which had been used in keeping the track and road bed in good order.<sup>37</sup>

This singular plan of entrusting the maintenance of the permanent way to outside contractors remained in force for three full years. At first, it appeared to work well. In the last year, when the road was upheld by the old or day labor system under the direction of roadmasters, the maintenance of the road cost \$108.74 per mile per quarter as against \$67.90<sup>38</sup> under the tender and contract method. The resultant annual saving for the whole line was \$15,151.64. Instead of incurring a good sized deficit, as in 1859, the Provincial Railway during the years the contract upholding system was in force showed a respectable surplus above operating expenses.

When, however, the Railway Department was reorganized in June, 1863, as a result of another change of government, the new railway commissioner speedily came to the conclusion that "an efficient and economical upholding of the road" was impossible under the contract system. As the following official utterances will show, this system had resulted in a marked deterioration in the condition of the road.

"It is quite clear that fencing, for several years was a mere nominal affair and what with fires, decay of material, and other deteriorating causes, the fencing had come to be in a most dilapidated condition."<sup>39</sup>

"The present system of upholding the road by contract is very unsatisfactory, and contractors are unwilling to clear out cuttings and ballast the road to the extent necessary to be done."<sup>40</sup>

"It was apparent to the most inexperienced observer that, whatever the cause, the work undertaken by these contractors had not been performed. The contracts and specifications, as I before remarked, are very precise and stringent in their terms and obligations, and a strict or even a reasonable compliance with these terms would, I think, have sustained the road in a condition far superior to what it was found to be on the 1st of July last. That, however, it has been found impossible to secure. Contractors, in their efforts to underbid each other, had taken the work for less than would pay the necessary labor, and they were driven to the necessity of slighting their work or doing nothing more than was barely sufficient to keep the trains on the track."<sup>41</sup>

<sup>34</sup> Ibid., p. 122.

<sup>35</sup> For the form of specifications see N. Scotia Journals 1864, App. No. 1, pp. 11-14.

<sup>36</sup> Railway Commissioner McCully's Report—N. Scotia Journals 1861, App. No. 4, p. 2.

<sup>37</sup> N. Scotia Journals 1864, App. No. 1, p. 7.

<sup>38</sup> R'way Report N. Scotia Journals, 1861, p. 2.

<sup>39</sup> Railway Com. Macdonald's Report N. S. Journals 1865, Appendix No. 7, p. 7.

<sup>40</sup> Road Inspector's Report—N. Scotia Journals 1864, App. No. 1, p. 2.

<sup>41</sup> Railway Report N. Scotia Journals 1864, App. No. 1, p. 1.



On August 1, 1863, therefore, the upholdence contracts were terminated and railway road masters again appointed to look after the maintenance of the permanent way. "To bring the road up to a safe and serviceable standard," it was found necessary to make large expenditures. As against \$22,381.78 spent for maintenance of way in 1861, \$42,004.47 had to be thus expended in 1864. Ditches and drains were cleaned out "which had been neglected for years," and an unusually large number of sleepers laid "to replace old ones so decayed as to render their retention dangerous to life and property."<sup>42</sup> Thus, although of brief duration, this experiment, unique in railway history of farming out the upkeep of a road, had a disappointing outcome and proved in the long run neither a safe nor an economical arrangement. Nor was it ever tried again in Canada.

Undeterred by the meagre earnings of the Provincial Railway, the Nova Scotia House of Assembly on March 14, 1864, voted to extend it from Truro to the town of Picton on the Gulf of St. Lawrence. The contracts for this new link were let on the schedule of prices plan and in the following manner:

"Soon after the Legislature had decided to build the railway, the public and intending contractors, more especially perhaps the latter, became exceedingly impatient to have the work commenced, they could not wait until the survey was properly completed. Tenders were actually invited before the line was located. A great number of persons expected or desired contracts."<sup>43</sup>

Doubtless, to satisfy the clamor for contracts, the Government let out the work in ten small sections of about five miles each. The contractors had little experience in railway building and had bid altogether too low prices for masonry and earth work.

"The work went on for a time, but it was soon discovered that the prices were altogether too small. The specifications were strict, the system would not admit of extras, and the work in consequence came to a stand."<sup>44</sup>

As the contractors were unable to go on, the government in the fall of 1865 relet the completion of the Picton line to Sanford Fleming, who agreed to finish the extension for a lump sum and within a period of seventeen months.

He made the further proviso, however, that he should be at liberty to employ whatever man he liked free from all political interference.<sup>45</sup> The insistence on this wise stipulation was beyond all doubt very helpful in enabling him to perform his contract satisfactorily and within the time limit specified.

#### Railway Run at a Heavy Loss

As before intimated, the Nova Scotia Railway—which cost the Province over a quarter of a million dollars annually in the shape of interest—was anything but a money-maker. During the twelve years, June 30, 1855, to June 30, 1867, the total gross earnings of the road was only \$1,423,381.75.<sup>46</sup> What kept down these gross receipts was the practice inaugurated in 1861<sup>47</sup> of requiring the railway to transport legislators, school teachers and members of the militia free of charge. The objections to such and similar free service on the part of a government owned transportation line were forcibly stated by a Nova Scotian railway commissioner as follows:

"Exactions are made upon the railway to the extent of thousands of dollars annually for the performance of a variety of services for the various departments and general purposes of government, without the remuneration of a dollar. \* \* \* It may be said that it makes no real difference, as the railway is a government one, and it is as well to make use of it in this way as to add directly to the cost of the services enumerated, but on the other hand, it may more appropriately be said that the railway, if paid for all the work performed, would add 10 or 15 per cent to its present receipts, and would thus enrich the provincial treasury to the same extent that it would be taxed were the system changed; with this additional advantage, that it could then be ascertained to what extent the department could legitimately swell its receipts, and what percentage

of interest it would pay upon the capital invested after meeting working expenses."<sup>48</sup>

Whether the Provincial Railway earned enough during the period 1855-67 to meet its operating expenses appears rather doubtful. It is true that the net earnings for the twelve years mentioned were nominally \$228,023.32<sup>49</sup> Yet, as the following extract shows, the road had in reality a much smaller surplus when it was taken over by the Dominion Government: "On the 1st of July, 1867, the revenue account was opened with a credit of \$45,345.41. This sum purported to represent the net earnings of the railways up to that date, or to speak more accurately, the sum earned toward the payment of interest on capital."<sup>50</sup>

But, in the opinion of the railway experts appointed by the Dominion Minister of Public Works in the summer of 1868 to report on the status of the railway which had failed to meet its operating expenses during the fiscal year just passed, even this small profit and loss surplus had not been earned, as a matter of fact. As no proper allowance had been made for depreciation of rolling stock and as the inadequate stations were in a most dilapidated condition, they arrived at the following conclusion:

"In view of the number of cars which have disappeared altogether, and of the state of the existing stock, we are of the opinion that the rolling stock has lost fully one-half of its existing cost. This taken in connection with the state of the way and works and buildings justifies the conclusion that the roads have not been worked at a profit, but that on the contrary, a large sum in excess of the apparent profit with which the Revenue account was opened when the Dominion came into possession, will have to be expended in order to restore the ways and works, the stock and equipment to a satisfactory and serviceable condition."<sup>51</sup>

This same body of experts found further that the books of the railway "had never been properly audited," and that the salaries paid many employees were too low to secure the services of competent men. In partial explanation of the lax discipline prevailing on the road, they had this to say: "If a conductor, an agent, a driver or other subordinate knows that he can only be dismissed after tedious inquiry, proof and disproof as to alleged misconduct, it will almost be impossible to assure that degree of discipline which is essential to the safe and economical working of a railroad."<sup>52</sup>

#### Political Interference—Obsolete Operating Methods

Neither in the appointment nor removal of subordinates were the higher officials in a position to act freely. On the contrary, they were unable to disregard the wishes of the local politicians in such matters.<sup>53</sup>

Finally, the committee characterized the opening methods employed on the government railway as obsolete and out of date in various respects. Lack of initiative on the part of the leading officials was deemed to be the main cause for this failure to keep abreast with the times in matters pertaining to railway management.<sup>54</sup>

With these excerpts, this sketch of the inception and the first decade of the Nova Scotia Railway may properly be closed. Upon the formation of the Dominion on July 1, 1867, the railway became an asset of the new federal government, and shortly afterward lost its separate identity through being made a part of the Intercolonial railway system. It should be borne in mind, however, that all the defects and drawbacks which have attended government ownership of railways in Canada were revealed in connection with the building and operation of the Nova Scotia Railway. Instead of being done away with, these various evils appeared again and at times in a more aggravated form when the dominion government undertook the management and construction of railways.

<sup>42</sup> Ibid., p. 2.

<sup>43</sup> Chief Engineer Fleming—Dom. Sess. Papers 1870, No. 13, App. BB, p. 6.

<sup>44</sup> Ibid., same page.

<sup>45</sup> See N. Scotia Journals 1866, App. No. 6, p. 3.

<sup>46</sup> Dom. Sess. Papers 1869, App. No., p. 128.

<sup>47</sup> N. Scotia Journals 1862, App. No. 20, p. 3.

<sup>48</sup> R'way Commissioner Longley—Report N. Scotia Journals 1867, App. No. 11, p. 2.

<sup>49</sup> Dom. Sess. Papers 1869, No. 8, App., p. 128.

<sup>50</sup> Report Carvell Committee—Ibid., p. 160.

<sup>51</sup> Report Carvell Committee, before cited at p. 160.

<sup>52</sup> Carvell Report at p. 165.

<sup>53</sup> Carvell Report at p. 162.

<sup>54</sup> Carvell Report at p. 163.

## General News Department

The firemen's brotherhood, in convention at Denver, Colo., has adopted resolutions in favor of the establishment of municipal markets and cold storage houses; and has endorsed the "Plumb plan" for public operation of railroads.

The National Service Committee, of Engineering Council, with headquarters at Washington, D. C., has started a weekly bulletin of developments in governmental engineering work. It will contain information regarding progress in legislation, and other activities of federal agencies, of interest to engineers.

S. M. Felton, president of the Chicago Great Western Railway Company, has been given the title of commander of the Legion of Honor by the French Government in recognition of his work as director general of military railways in France. Mr. Felton has also been decorated by the United States Government with the distinguished service medal for his efficiency in connection with the same work.

The Brotherhood of Railroad Signalmen, in convention at Kansas City, Mo., proposes to open negotiations with the Railroad Administration concerning wages. These men are now rated as belonging to "shop crafts," but they maintain that their duties are more responsible than those of shop workmen, and they have called on the director general for a different classification, with wages and working conditions adjusted accordingly.

Lieutenant-Colonel T. H. Lantry, formerly division superintendent on the Northern Pacific, with headquarters at Glendive, Mont., has been appointed district inspector of the Trans-Baikal district of the Siberian Railways, and Lieutenant-Colonel B. O. Johnson, formerly superintendent of the Montana division of the same road, at Livingston, Mont., has been appointed district inspector of the Omsk district of the Siberian Railway.

"Two Popular Methods of Getting Killed," is the title of the latest safety-first pamphlet issued by George Bradshaw, safety supervisor of the Pere Marquette and other Michigan roads under Federal Manager F. H. Alfred. The two methods are the highway crossing method, and walking along railroad tracks. Interesting comparisons are drawn between these American methods of getting killed and ancient methods of accomplishing the same purpose; and the ancients are believed to have had the better way.

The Air Mail Service between New York and Washington is reported as having been operated during the month of June at 99 per cent. efficiency; the miles flown being 11,118, and the weight of mail carried, 15,643 lb. Between Cleveland and Chicago the percentage of efficiency is given as 100; total miles 19,825; weight of mail 19,603 lb. The average speed on this route was 97.8 miles an hour. The route from New York to Cleveland, crossing the Allegheny Mountains, has been operating successfully since July 1.

Machinists of the St. Louis-San Francisco are considering the question of striking, over the controversy which has arisen because of the appointment of W. J. Foley as general roundhouse foreman at North Springfield, Mo., and the General Committee has sent out strike ballots. The contract between the company and the machinists states that a machinist shall be placed over machine men, and it is this clause of the contract that the men claim has been violated in the appointment of Mr. Foley, who was formerly a locomotive engineer. He was later promoted to road foreman of engines and then was acting assistant superintendent in the operating department until the return of the assistant superintendent from Government service. In defense of the appointment of Mr. Foley, officers of the road say that no

portion of the contract between the machinists and the company has been violated, because the duties of the general foreman cover not only machinists but boilermakers, pipefitters, electricians, tank men and miscellaneous repairmen as well as engineers and firemen. Mr. Foley has been a member of the Brotherhood of Locomotive Engineers.

Complete reports of "No Accident Week" in the Northwestern region, June 22 to 28, illustrate in several interesting ways the practical results of the campaign. Of the 62 roads competing in the campaign, 50, or 79.36 per cent, had clear records. A reduction in accidents was made from 481 (of which 6 were fatal) in the week of June 22 to 28, 1918, to 119 (of which 5 were fatal) in the corresponding week this year; a decrease of 362 accidents, or 75.46 per cent. Based on the number of accidents per hundred men employed there was accomplished a reduction of 77.78 per cent. Based on the figures for 1919 there was one accident for every 2,304.481 men employed in the region; in 1918 one accident for every 568.563 men employed, a decrease of 1,735.918, or 305.5 per cent. There was one accident to 444.269 miles of road operated in 1919, and one accident to 109.913 miles operated in 1918, a decrease of 34.356, or 304.2 per cent. The road employing the largest number of men which operated with a clear record was the Chicago Great Western. The road having the largest operated mileage and making a clear record was the Oregon-Washington Railroad & Navigation. This road also had the largest number of accidents last year. The Chicago, St. Paul, Minneapolis & Omaha made the largest reduction in accidents based on 100 men employed.

### The Clover-Leaf Accepts 350 Cars

The controversy between the Toledo, St. Louis & Western and the Railroad Administration over the latter's allocation of freight cars to the road has been settled without a court trial, with the result that the company will accept 350 of the 1,250 freight cars originally allocated to it by the Director General. When this allocation was made, the receivers asked for instructions from the court, and the stockholders' and bondholders' committees filed statements setting forth that the number of cars allocated was excessive, that the road needed no new cars and that the cost of these cars was excessive. The receivers then asked the court (the Federal District Court in Ohio), for an injunction, and the court subsequently granted a preliminary injunction restraining the receiver from accepting the allocation. The Railroad Administration then suggested a compromise, and the matter was ultimately settled by the acceptance by the receiver of 350 cars.

### She Got the Pass\*

I understand you hold the key of the way to the shining tracks that tempt us in the spring—to wander out in some strange unknown, where the charm of the unexpected will happen.

That is what we think, but, of course, what does happen is the customary dirt and cinders—the sight of ordinary ways—and the same people in a coach instead of an office.

As I said before, desiring to wander in the spring, I have filled out the attached form.

Wish to explain to you my sudden mania for visiting all these relatives, as you may have noticed from my various requests for transportation, and which may have caused you some perplexity as Sam probably told you I was an

\* Copy of request for a pass from an administration employee in Chicago.



## REVENUES AND EXPENSES OF RAILWAYS

MONTH OF MAY, 1919

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses			Net from railway operation.	Operating income (or loss).	Increase (or decrease) comp. with last year.
		Freight.	Passenger.	Total.	Way and structures.	Equip. ment.	Trans- portation.			
			(inc. misc.)							
Alabama & Vicksburg	141	\$140,239	\$58,846	\$212,350	\$44,179	\$60,456	\$87,199	\$7,990	\$200,426	\$92,331
Ala. Great Southern	312	643,645	201,528	887,248	150,332	187,248	15,408	18,676	730,434	131,991
Ann Arbor	301	252,937	55,499	328,176	51,546	32,176	10,432	10,397	280,503	30,934
Arizona Eastern	377	247,508	39,982	313,148	94,644	56,132	2,680	102,798	262,191	30,934
Atch. Topick & Santa Fe	8,636	9,678,047	3,500,350	13,827,410	2,230,180	3,377,428	122,274	263,260	10,718,936	3,108,474
Atlanta & W. Point	93	113,621	98,351	233,704	24,818	41,775	88,827	6,044	167,909	57,295
Atlanta, Birm. & At.	639	347,656	49,069	443,054	115,330	140,273	7,326	12,458	541,712	114,728
Atlantic City	177	222,828	220,748	443,576	156,135	158,952	54,377	1,222	269,471	177,048
Atlantic Coast Line	4,875	3,314,607	1,362,556	4,999,377	771,951	1,199,029	2,307,755	123,571	4,479,047	513,596
Balto. & Ohio Chicago Terminal	91	.....	.....	149,065	37,477	41,953	134,801	7,360	226,653	-77,590
Balto. & Ohio	515	10,308,901	2,791,926	14,327,444	2,255,060	4,459,451	154,252	361,152	13,692,323	377,211
Baltor. & Ches. & Atl.	87	78,359	34,397	117,714	15,977	29,716	80,093	3,703	130,516	12,802
Bangor & Aroostook	632	331,585	73,980	427,962	70,115	121,735	186,608	12,263	400,432	110,581
Beaumont, Sour Lake & Western	118	59,639	22,981	87,398	19,132	34,451	40,387	4,409	100,232	12,834
Belt Ry. Co. of Chicago	31	.....	.....	87,713	32,566	59,443	190,311	7,512	290,420	15,682
Bessemer & Lake Erie	217	1,397,624	32,832	1,432,741	121,374	338,957	8,558	18,020	885,424	567,315
Birmingham & Gulf	37	63,079	1,477	64,556	38,951	58,236	25,292	3,408	183,431	40,000
Birmingham Southern	20	28,831	1,477	29,308	3,545	5,208	20,407	2,798	32,518	5,984
Boston & Maine	2,251	3,377,712	1,706,668	5,605,044	929,679	1,093,200	3,219,526	187,768	5,518,539	89,217
Buff. & Susq. R. R. Corp.	256	139,552	6,585	161,443	37,040	80,782	57,885	8,539	183,664	27,671
Buff., Roch. & Pitts.	589	814,658	127,186	988,330	210,247	411,066	529,692	34,852	1,203,426	27,000
Canadian Pacific Line in Maine	233	81,005	31,574	124,379	27,369	26,285	89,598	2,994	178,792	143,74
Carolina, Cincinnati & O.	282	442,287	31,393	481,039	85,703	174,262	4,981	121,723	397,581	82,651
Central New England	301	646,672	22,425	694,716	179,449	77,539	3,112	25,024	506,516	188,199
Central of Georgia	1,918	1,017,227	483,865	1,656,786	286,853	309,496	731,933	58,810	1,421,709	85,811
Central R. R. of New Jersey	685	2,562,381	639,436	3,467,311	538,820	1,000,769	24,908	86,535	3,388,077	97,711
Central Vermont	411	359,485	75,937	435,422	133,038	128,831	9,001	16,384	607,840	131,007
Charleston & Western Carolina	342	194,176	51,801	245,935	43,090	122,652	12,607	8,833	219,550	37,745
Chesapeake & Ohio	2,506	4,778,221	1,356,745	6,528,064	827,278	1,300,355	32,984	109,084	4,553,168	1,972,886
Chicago & Alton	1,050	1,486,672	5,407,589	21,566,632	426,145	593,146	31,260	43,934	2,018,932	69,774
Chicago & Eastern Ill.	1,136	1,541,012	369,697	2,031,639	291,162	733,567	22,898	45,851	1,988,626	96,921
Chicago & Erie	269	702,905	121,592	902,288	59,262	133,127	12,701	29,138	655,420	72,678
Chicago & Northwestern	8,090	7,694,193	2,626,958	11,335,680	2,355,093	2,456,981	63,254	239,430	10,138,234	89,43
Chicago, Burl. & Quincy	937	7,962,537	2,700,133	11,698,695	2,127,399	2,032,655	88,781	306,115	9,409,006	80,43
Chicago Great Western	1,496	998,362	468,904	1,596,772	423,945	393,612	19,092	441,919	1,634,275	73,195
Chicago, Ind. & Lou.	657	648,554	256,553	993,641	107,537	229,397	15,071	27,373	861,278	86,671
Chicago Junction	12	.....	.....	314,915	58,769	45,159	216,031	7,158	327,174	12,258
Chicago, Milwaukee & St. Paul	10,648	8,670,740	2,293,160	12,060,418	2,358,418	2,932,032	99,643	5,527,402	11,259,732	93,361
Chicago, Peoria & St. L.	247	104,292	24,832	140,569	40,910	64,860	2,663	8,433	194,056	138,05
Chicago, Rock Island & Pacific	7,592	5,533,318	2,370,349	8,413,300	1,501,017	1,934,399	98,037	215,292	7,633,526	90,73
Chicago, Rock Island & Gulf	474	266,697	77,183	365,884	70,028	81,544	7,422	182,718	354,748	96,95
Chicago, St. Paul, Minn. & Omaha	1,749	1,379,016	546,896	2,088,908	429,808	363,456	16,155	61,396	1,860,632	90,96
Chicago, Terre Haute & Southeastern	374	269,485	21,016	298,005	49,023	134,382	2,994	19,680	317,356	106,49
Cincinnati, Ind. & Western	321	164,056	58,316	246,894	62,565	71,849	6,011	135,034	141,717	117,65
Cincinnati, New Orleans & Texas Pacific	337	1,011,996	278,380	1,330,291	183,007	461,346	517,668	33,981	1,221,546	90,47
Cincinnati Northern	76	68,577	5,141	90,477	18,012	17,076	1,415	40,822	78,023	86,23
Cincinnati, Lebanon & Northern	251	221,972	16,840	244,464	39,175	51,241	87,719	5,444	185,541	75,589
Cleveland, Cincinnati, Chic. & St. Louis	2,395	5,694,377	1,422,013	5,539,159	815,050	972,341	64,942	118,694	4,303,179	77,681
Colorado & Southern	1,099	770,361	190,883	1,090,945	207,858	249,404	42,108	36,178	929,497	91,04
Colorado & Wyoming	41	23,525	1,435	94,012	12,181	18,801	38,451	3,842	73,423	78,39
Cumberland Valley	163	377,803	68,908	474,746	103,197	118,466	7,116	10,209	411,783	9,163
Delaware & Hudson	875	2,450,575	227,345	2,870,722	381,743	63,477	1,214,221	109,202	2,570,236	300,486
Delaware, Lack. & Western	955	4,470,101	970,710	5,211,500	576,771	1,231,044	2,530,511	110,235	4,548,406	1,573,189
Denver & Rio Grande	2,993	1,768,698	469,756	2,388,883	482,802	489,442	20,590	6,082	1,878,658	73,37
Denver & Salt Lake	255	197,067	32,421	236,023	96,445	88,916	138,055	5,009	329,143	139,44
Detroit & Mackinac	381	89,740	32,500	130,480	27,694	40,578	3,374	10,209	143,712	110,14
Detroit & Toledo Shore Line	61	173,198	.....	175,542	18,462	13,608	49,020	2,933	85,257	88,250
Detroit, Toledo & Ironmont	457	2,242,199	11,474	2,298,005	94,806	98,816	2,634	14,094	338,574	144,82
Duluth & Iron Range	292	1,070,359	18,851	1,159,270	128,030	99,886	419	216,124	1,489,431	33,62
Duluth, Missabe & Northern	410	3,213,379	41,513	3,361,898	195,076	140,388	1,925	15,865	3,095,935	2,557,945
Duluth, South Shore & Atlantic	599	291,177	102,499	420,873	102,744	65,991	200,271	9,214	390,141	92,69
Duluth, Winnipeg & Pacific	178	121,062	20,041	143,861	38,411	30,113	7,114	7,614	143,861	98,415
East St. L. Connecting	3	.....	.....	101,267	17,260	17,260	60,436	3,874	97,459	96,23
El Paso & S. W.	1,027	819,371	178,643	1,053,024	123,056	202,575	300,842	25,491	668,137	3,807
Elgin, Joliet & Eastern	830	1,373,250	13	1,522,132	152,308	418,159	5,647	24,491	1,186,274	77,94
Erie, R. R.	1,989	5,937,634	1,170,698	7,709,062	926,675	2,473,492	65,234	208,591	6,984,377	89,89
Florida East Coast	784	547,105	187,405	856,480	134,661	139,804	7,106	18,024	691,465	80,73
Florida, Jacksonville & Gulfville	88	40,916	33,462	107,797	10,516	9,562	37,783	4,883	63,339	7,389
Fort Smith & Western	253	92,928	24,748	125,945	25,946	34,551	1,136	4,143	112,277	89,14
Fort Worth & Denver City	454	606,870	246,395	883,752	158,109	158,109	296,574	20,949	579,651	63,58

orphan and all my relatives so nearly as he could ascertain died rather than be bothered with me.

It is because—I state again—I just want to wander in the spring, but it seems the Administration objects to our traveling unless it's a case of death, sickness, want, woo, or relatives. Not having many relatives, I may be pardoned for wondering why relatives are put in this unhappy category. But going over the list under which it seems I must put my reason to travel—or be scornfully refused by you—I chose relatives.

As if I had some charming ones, I certainly would visit them.

The desire of the Administration to encourage dutiful journeys and to foster the kindly feelings which should come from ties of blood appeals to me. But what I want to know, having the passion for knowledge that prompts so many of our fellow countrymen to write the papers to learn why we are here, and why everything happens that does happen because we are here—being animated by a similar impulse, I rise to inquire—most respectfully, most respectfully—

WHY don't you want us to travel for a good time?

You know, being deadheads, we never would travel if we paid our way. So the roads are not out anything by giving us the pass. Trains you let me ride on are rarely patronized by other than pass holders—

Please Mr. ...., why can't we ride just to

Take a Trip  
And see the sights  
And delude ourselves  
With the thought  
That we are going  
Down the world  
and  
Having experiences.  
And get a little  
Mental tonic  
and Pep.

Surely you don't think we should always stay at home unless

someone dies  
and besides  
you make  
people like myself  
who have no relatives  
Tell lies.

**The United States Circuit Court of Appeals** recently handed down an opinion in the controversy between the Cincinnati, Indianapolis & Western Railroad Company as the successor of the Cincinnati, Indianapolis & Western Railway Company and the Cincinnati, Hamilton & Dayton Railway Company, its receivers, Judson Harmon and Rufus G. Smith, and the Toledo & Cincinnati Railroad Company, successor of the old Cincinnati, Hamilton & Dayton lines. The opinion affirmed in part and modified in part a decree previously issued by United States District Judge Hollister, relating to the ownership of the bulking yard in Indianapolis, Ind. This decree held that the bulking yard belonged to the Chicago, Indianapolis & Western, even though it has been in the name of the Cincinnati, Hamilton & Dayton since 1898. Judge Hollister required the Cincinnati, Indianapolis & Western to pay the future installments on the mortgage as the only payment required in order to get its title. The parties have agreed to value the property at \$96,000. The decision of the Appellate Court affirms the decision that the property belongs to the Chicago, Indianapolis & Western and also held that the payments made by the Cincinnati, Hamilton & Dayton before its receivers were appointed could not be recovered. The payments made by the receivers of the Cincinnati, Hamilton & Dayton on account of the mortgage on the property, according to the Appellate Court opinion, were made under mistake of fact and must be repaid without interest by the Cincinnati, Indianapolis & Western. Under this ruling the Cincinnati, Indianapolis & Western will be required to repay \$1,450 paid by the receivers and pay the remaining installments of the mortgage note, amounting to \$22,000, thereby obtaining clear title to the property.

## Traffic News

Grain loading, in the Central Western region in June aggregated 29,704 cars as compared with 22,853 cars June last year, an increase of 30 per cent. Coal loading (67,979 cars) decreased 42.4 per cent from the 118,111 cars loaded in June last year. Live stock shows no change.

H. L. McReynolds, chief clerk of the Kansas City (Mo.) District Freight Traffic Committee and formerly chief clerk in the general freight office of the Chicago, Rock Island & Pacific at Kansas City, has been promoted to secretary with the same headquarters, succeeding C. P. Dowlin.

Railroads bringing cattle into this country from Canada have been notified by the Secretary of Agriculture that, beginning August 1 all cars containing animals for immediate slaughter must be so carded ("Canadian Cattle for Immediate Slaughter"), and the fact must be noted on waybills.

A strike in New York harbor has this week tied up about 300 freight ships, mostly privately owned coastwise vessels. The strikers are firemen, oilers and water tenders, and they want higher pay and recognition of their union. The United States Shipping Board, owner of a large proportion of the 300 ships, is reported to have taken a firm stand, making no move to start its ships except in a few cases where new men could be secured.

The Long Island Railroad, during the war and since demobilization began has moved between 4,000,000 and 5,000,000 soldiers to and from the camps on Long Island, besides carrying tens of thousands of visitors. Even now from 10,000 to 20,000 troops are being carried daily. The regular business of the railroad has grown rapidly. There are 5,000 more persons commuting daily than last year at this time, requiring several additional trains of eight cars each, morning and evening. Between July 3 and July 7 the road broke all records by carrying 1,433,600 passengers. This is 28 per cent. more than were carried in the same five-day period of 1918. This traffic is being handled with practically the same number of coaches and engines as were in service in 1918.

Louis F. Swift, president of Swift & Company, Chicago, in denying charges recently made against the packers by the National Wholesale Grocers' Association in a complaint filed with the Interstate Commerce Commission, said in part: "I cannot find that Swift & Company enjoys one special privilege, nor does it participate in one special rate, which cannot be secured by any other shipper in the United States. I welcome this investigation. We certainly do not wish to have any unfair advantages or discrimination and predict that the finding of the Commission will be that we have none. The route cars which we operate are operated under specific railroad tariffs which have been repeatedly approved by the Interstate Commerce Commission and which call for a certain guaranteed minimum or penalty in case of a lightly loaded car. Similar cars may be operated by any one who is willing to agree to this penalty provision. We have built up over a long period of years an efficient transportation department which looks after our shipments. It is a part of that department's duties to follow every shipment of goods to its destination and to see that there is no unnecessary delay. I understand that one of the complaints made is that we enjoy the benefits of our refrigerator cars. We do, but the building of these cars was forced on us by the refusal of the railroads to build them. Any shipper of goods who cares to tie up his money in that way may build his own cars and have his own transportation department look after them. I might add here that for a number of years our refrigerator cars have been operated at a loss. We do not benefit by any 'unlawful, unreasonable, unjustly discriminatory rates, rules, mixtures, minima. and other carload tariffs, and we do not seek special privilege.'"



### Texas Oil Traffic

The congestion of freight traffic continues to be a serious problem in the newly developed oil regions of Central West Texas. Several hundred additional cars of oil would be shipped each day from Burkburnett, Ranger and other fields if cars and other facilities were available. The Texas & Pacific is crowded from Fort Worth westward to Sweetwater, 202 miles. At Ranger, 95 miles west of Fort Worth, the yards resemble those of a large city, and the freight receipts of the station are reported as larger than those at Dallas or any other city on the Texas & Pacific. A double track is needed between Fort Worth and Ranger. On the Fort Worth & Denver City and the Missouri, Kansas & Texas traffic conditions in the oil fields reached by those lines are little better than on the Texas & Pacific.

### I. C. C. Bill-of-Lading Declared Illegal

Circuit Judge Henry G. Ward, in an opinion filed in the United States District Court in New York City, July 12, granted the petition of the Alaska Steamship Company, the Central of Georgia Railway Company, the Clyde Steamship Company, and other steamship and railroad companies for a decree setting aside an order of the Interstate Commerce Commission requiring them to use forms of bills of lading, for domestic and export shipments, prescribed by the Commission. The decision says: "Congress has unquestionably the power to declare what terms common carriers, subject to the Interstate Commerce act, may insert in their bills of lading. Examination of the statute does not convince us that Congress had any intention to confer upon the Commission the right to prescribe the terms of the bills of lading." Judge Julius M. Mayer concurred in the decision, but Judge Learned Hand dissented.

### Anthracite Shipments for June

Shipments of anthracite for the month of June, as reported to the Anthracite Bureau of Information, Philadelphia, amounted to 5,619,591 tons, as compared with 5,711,915 tons in the preceding month, and with 6,867,669 tons in the corresponding month of 1918. As was the case in May, the larger part of the decrease in June of this year as compared with last was due to the smaller output of steam sizes from the washeries, more than two-thirds of the decrease being in the steam sizes.

The shipments by companies were as follows:

	June, 1919	June, 1918	Coal year, 1919-1920	Coal year, 1918-1919
Phila. & Reading.....	1,084,635	1,345,079	3,284,946	3,935,469
Lehigh Valley .....	1,041,696	1,352,820	2,937,780	3,856,311
Central of N. J. ....	508,702	622,005	1,489,004	1,717,865
Del., Lack. & W. ....	903,306	1,015,438	2,702,822	3,061,059
Del. & Hudson.....	661,991	773,691	1,932,697	2,371,234
Pennsylvania .....	372,658	482,737	1,157,826	1,424,491
Erie .....	616,939	756,257	1,819,718	2,212,879
N. Y., O. & W. ....	167,327	186,948	479,586	549,670
Lehigh & N. E. ....	262,337	332,694	751,842	994,320
Totals .....	5,619,591	6,867,669	16,556,221	20,123,298

### Gasoline Transportation Dangerous

The Bureau for the Safe Transportation of Explosives and Other Dangerous Articles has sent to the shippers of gasoline, and owners, lessees and builders of tank cars, a circular calling attention to the fact that accidents and carelessness in the transportation of gasoline during 1918 caused many times as much loss and damage as the transportation of the unusually large volume of explosives required to meet war condition.

In eight years, 1910 to 1917 inclusive, 78 people were killed, 607 were injured and a property loss of \$1,626,000 resulted from the transportation of gasoline on railroads, while during the same period, only 3 people were killed, 30 injured and property loss of \$147,000 resulted from the transportation of explosives on the railroads.

In 1918, under war conditions, 16 deaths, 46 injuries, and a property loss of \$881,000 resulted from the transportation of gasoline on railroads, while for the same year there was 1 death, 4 injuries and property loss of \$33,000 resulting from the transportation of explosives alone.

## Commission and Court News

### Court News

#### Aggravation of Previous Incurable Disease

The Alabama Supreme Court holds that a railroad may be liable, under the Federal Employers' Liability Act, for the death of an employee from injuries caused by the sudden stop of a train, although the employee was suffering from a slow, but incurable and fatal disease, and although the shock received would have been of no serious consequence to a man in sound health.—*Louisville & Nashville vs. Wright* (Ala.) 80 So. 93. Decided November 21, 1918.

#### Posting of Tariffs

The Mississippi Supreme Court holds that the Interstate Commerce Rule adopted October 12, 1915, amending Rule 52 as to posting of notice of change in tariffs by dispensing with the necessity of posting notice, applies to excursion fares for which only a three-day posting of notice was necessary under the amendment of Rule 52, adopted December 2, 1912.—*Mississippi Central vs. Graham* (Miss.) 80 So. 66. Decided December 16, 1918.

#### Assault on Passenger By Newsboy

The South Dakota Supreme Court holds that a railroad, permitting a news agent on its train under contract with another, was liable for his assault on a passenger in the course of and within the scope of his business, as he was its agent in respect to the carriage of passengers.—*Blankenbaker vs. Chicago, M. & St. P. (S. Dak.)* 168 N. W. 744. Decided September 2, 1918.

#### Initials on Bills of Lading

The Maine Supreme Court holds that if the initials "O R S L & C" (Owner's Risk, Shipper's Load and Count) on a bill of lading following a description of the goods were within the general information of the court, and were in themselves plain enough to permit of judicial construction, it would be unnecessary to prove their import; otherwise it would be competent to do so, the words being of particular significance in freight transportation.—*Lewis Poultry Co. vs. New York Central* (Me.) 105 Atl. 108. Decided December 12, 1918.

#### Indemnity from Loss of Goods Being Returned

A railroad attempted to deliver goods, but the consignee obtained an order of attachment against them. The consignor thereupon requested the railroad to return them. The railroad required the consignor to sign a contract holding it harmless from liability in returning them, and constituting the railroad or connecting road the consignor's agent. The New York Appellate Division holds that the railroad was not liable for the loss of the goods while being returned.—*Peugot, etc., Co. vs. New York Central*, 173 N. Y. Supp. 455. Decided January 2, 1919.

#### Federal Employers' Liability Act—Assumption of Risk

The engineer of a freight train started the train on an interstate journey while the fireman was in a lunchroom eating. The fireman came out and, seeing the train in motion, climbed on top of a car. He stumbled and fell between cars and was killed. He was an experienced and competent fireman, and knew, or should have perceived, the dangers which he would normally and necessarily encounter in passing over the train. In an action for his death the Kansas Supreme Court held that, under the Federal Employers' Liability Act, he assumed the risk.—*Briggs vs. U. P. (Kan.)* 175 Pac. 105. Decided April 1, 1918.

## Equipment and Supplies

### Locomotives

THE DORADA EXTENSION RAILWAY (Chile) has ordered two Prairie type locomotives from the American Locomotive Company. These locomotives will have 15 by 20 in. cylinders, 40 in. driving wheels and a total weight in working order of 85,000 lb.

THE JAVA STATE RAILWAYS have ordered 12 compound superheater 2-8-8-0 type Mallet locomotives from the American Locomotive Company. These locomotives will have 17½ and 26½ by 24 in. cylinders, 43¾ in. driving wheels and a total weight in working order of 198,000 lb.

THE IMPERIAL RAILWAYS OF FORMOSA have ordered three Consolidation locomotives from the American Locomotive Company. These locomotives will have 20 by 24 in. cylinders, 49 in. driving wheels, a total weight in working order of 134,000 lb. and will be equipped with superheaters.

THE CORDOBA CENTRAL RAILWAY (Argentina) has ordered six superheater Mikado locomotives from the American Locomotive Company. These locomotives will have 21½ by 24 in. cylinders, 48 in. driving wheels and a total weight in working order of 165,000 lb.

[The Cordoba Central is a British-owned railway, is of metre gage and about 1,200 miles in length.]

### Passenger Cars

FRANK M. SAUNDERS, New York, is inquiring for 5 railway inspection trolley cars for export.

THE PENNSYLVANIA EQUIPMENT COMPANY, 1420 Chestnut street, Philadelphia, Pa., is in the market for a second hand standard gage 40 ft. to 60 ft. baggage and express car of steel underframe or all steel construction.

### Freight Cars

THOMAS W. SIMONS, New York, is inquiring for 10 steel side-dump cars for export.

SWIFT & Co., Chicago, has issued an inquiry for 400 40-ton refrigerator cars.

STRONG & TROWBRIDGE COMPANY, New York, is inquiring for 6 flat cars and 2 tip cars for export.

THE CERRO DE PASCO, New York, has ordered 20 40-ton steel ore cars from the American Car & Foundry Company, Chicago, for export to Peru.

THE CLEARFIELD BITUMINOUS COAL CORP., Clearfield, Pa., has ordered 100 steel mine cars from the American Car & Foundry Company, Chicago.

THE COMMERCIAL BANK OF SPANISH AMERICA, New York, has ordered 12 gondola cars and one observation car for the Columbian Northern from the American Car & Foundry Company, Chicago.

OSCAR B. CINTAS, Havana, Cuba, has ordered from the American Car & Foundry Company, Chicago, 30 cane cars for export to Cuba, 20 of which are for the Central Cunagua, and 100 flat cars and 250 box cars for the Cuban Northern.

A battleship of 43,000 tons, with 16-inch guns, has been ordered by the Secretary of the Navy, the contract having been awarded on July 10 to the Newport News Shipbuilding Company. Mr. Daniels will award a contract for another ship of the same type next week. These will be the largest battleships in the world.

## Supply Trade News

Edward Law, son of the late Ernest Law, was admitted on July 1, as a partner to the firm of Ernest Law & Co., iron and steel merchants, Philadelphia, Pa.

J. E. Slimp has been appointed general manager of the United Railway Car Company, Boston, Mass., manufacturer of interurban and short line railway cars.

J. L. Dahl has been appointed manager of the New York office of the Gregg Company, Ltd., Hackensack, N. J., effective July 15. He succeeds C. R. Gier, who is no longer in the employ of the company.

The Liberty Car Wheel Company, Hammond, Ind., has been incorporated with \$500,000 capital stock and the following officers have been elected: President, Patrick H. Joyce; vice-president, F. O. Bunnell; treasurer, John E. Fitzgerald; secretary, Charles Aaron.

L. H. Elliott has been elected vice-president and secretary of the Upson Nut Company, Cleveland, Ohio, succeeding Norris J. Clarke, who has resigned. Mr. Elliott will retain his former position as secretary and treasurer of the Bourne-Fuller Company, Cleveland.

The Anglo-Saxon Trading Corporation, 114-A Pitt street, Sydney, Australia, advises through its New York office that it desires to receive catalogues and full particulars from manufacturers of all kinds of devices relating to the mechanical side of railway transportation.

Elliot Reid, assistant to general manager of the Westinghouse Lamp Company, 165 Broadway, New York, has been appointed sales manager, and will have charge of the commercial activities of the company in both large and miniature classes of lamps in domestic territory.

Arthur S. Lewis, formerly with the Chicago, Cleveland Car Roofing Company and more recently with Flint & Chester, New York, has become associated with the Barco Manufacturing Company, Chicago, and will for the present be located at New York City, and cover Southern territory.

L. D. Winters, representative at Chicago of the W. S. Tyler Company, Cleveland, Ohio, wire netting manufacturers, has opened an office in the Peoples Gas building, Chicago, for the purpose of conducting a railway specialty business. Mr. Winters will continue to represent the W. S. Tyler Company.

H. B. Barbee has been appointed manager of eastern railroad sales for the Chicago Pneumatic Tool Company, Chicago, and Nelson B. Gatch, district manager of sales at Chicago, has been appointed district manager of sales, with headquarters at 52 Vanderbilt avenue, New York City, to succeed L. C. Sprague, who has been appointed manager of western railroad sales, with headquarters at Chicago.

The Interstate Iron & Steel Company, Chicago, has started work on the installation of a new 75-ton open hearth furnace and a continuous bar mill at South Chicago, Ill. In addition to this construction the company plans to rearrange its tracks and improve its facilities for handling scrap. The addition of this furnace will make a total of five at the South Chicago works.

C. D. McClary, who has been with the Western Electric Company, New York, since February, 1910, has been made sales manager of the Pittsburgh office. Mr. McClary was first connected with the Philadelphia office and was transferred to Pittsburgh the latter part of 1910. In April, 1916, he joined the sales force, and in April, 1918, was promoted to assistant sales manager, which position he held until his present promotion.

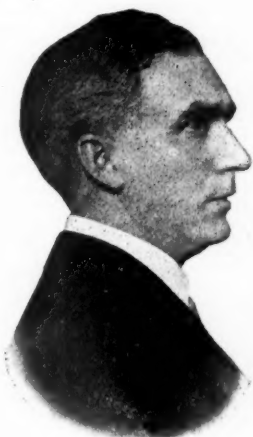


The Railway Motor Car Company of America, Chicago, plan to construct a manufacturing plant at Hammond, Ind., at an approximate cost of \$80,000. The building will be 300 ft. long by 100 ft. wide, 50 ft. of which will be two stories high. The superstructure will be of brick construction.

The Q & C Company, with general offices at 90 West street, New York, announces the formation of The Q & C Packing & Lubricator Company, with general offices at the same address and a factory at 70 Pearl street, Jersey City, N. J. Charles F. Quincy is president of the new company; W. W. Hoit is vice-president, and F. F. Kister, treasurer, all of the present Q & C Company organization. S. S. Whitehurst, vice-president, and J. G. Smaltz, secretary, are now officials of Steele & Condict, Inc., Jersey City, N. J., where increased manufacturing facilities are being provided to care for the Q & C piston rod packing and lubricator.

William Barlow Ross, assistant to the president of Mudge & Co., Chicago, with headquarters at Washington, D. C., has been appointed district manager of the same company, in charge of eastern and southeastern sales, with headquarters at New York. Mr. Ross was born on December 24, 1868, at Belfast, Ireland, and was educated in Manchester, England. He came to America in April, 1889, and began railway work with the Burlington, Cedar Rapids & Northern, as a trucker and checker at Cedar Rapids, Iowa. He was later transferred to the auditor's office where he served in various capacities until December, 1892. He was then appointed timekeeper in the superintendent's office, and later chief clerk. From June 30, 1895, to August 31, 1901, he was utility clerk to the vice-president and general superintendent, and then was promoted to car accountant. When the Burlington, Cedar Rapids & Northern was absorbed by the Chicago, Rock Island & Pacific, in June, 1902, he became car agent, and the following January was appointed statistician to the general manager of the system. In September, 1903, he was appointed transportation clerk to the third vice-president and subsequently was consecutively transportation clerk to the president, statistician to the president and chief clerk to the standardization committee. On January 1, 1910, he was elected secretary of the board of pensions, and later was made secretary of the pension and personal record bureau. In July, 1916, he resigned his railway position to become secretary and assistant treasurer of Mudge & Co. The following April he was promoted to secretary and treasurer, and since May, 1918, served as assistant to president, with headquarters at Washington, D. C., in charge of securing priorities, etc., and also in charge of southeastern sales.

The Midwest Engine Company, Indianapolis, Ind., has opened new offices in the Florida Life building, Jacksonville, Fla., in charge of D. J. Carrison, formerly with the Busch-Sulzer Brothers Diesel Engine Company, St. Louis, Mo.; in the Caples building, El Paso, Tex., in charge of Chester B. Loomis, formerly consulting engineer and later major of engineers, of the Purchase, Storage and Traffic Division of the General Staff, U. S. A.; at 111 Broadway, New York, in charge of B. H. Downing, who for seven years has been engaged in the marketing of pumps and condensers; and in the Maison Blanche building, New Orleans, La., in charge of J. R. Lowe, who has been engaged in the marketing of prime movers and pumps for several years.



W. B. Ross

## Financial and Construction

### Railway Financial News

BALTIMORE & OHIO.—President Daniel Willard has issued a lengthy letter to stockholders in which he intimates that with early restoration to normal conditions, dividends on his company's common stock may be resumed.

On that point he says: "If federal control of the railroads is terminated on December 31 next, and if Congress in the meantime provides a wise and constructive policy of regulation for the future, and if the director general of the Interstate Commerce Commission will authorize and make effective before that date such additional advance in the rates and charges as may be necessary to restore proper relation between revenue and operating expenses, and I believe that we may reasonably expect all of these things to be done, I can see no reason why the railroads generally may not thereby be placed upon a sound and self sustaining basis or why the Baltimore & Ohio in particular may not look forward with confidence to an early restoration of normal conditions, which should, of course, be accompanied by a return of reasonable dividend payments to holders of Baltimore & Ohio common shares."

He reviews matters which led up to the necessity for passing the dividend on the common stock, which in substance are familiar. He argues that a further increase in railroad rates and charges of substantial character are imperative.

DELAWARE & HUDSON.—See editorial elsewhere in this issue.

GEORGIA COAST & PIEDMONT.—The Brunswick Board of Trade is making a stubborn fight to prevent the confirmation of the sale of this road to Gordon & Freedman, a salvage firm of New York, which purchased the property on July 2 for \$300,000.

SOUTHERN PACIFIC.—See editorial elsewhere in this issue.

WABASH.—See editorial elsewhere in this issue.

### Railway Construction

THE EDWARD RUTLEDGE TIMBER COMPANY RAILROAD, COEUR D'ALENE, IDAHO.—This company will build an eight-mile railroad with branches from Clarkia, Idaho, to its large timber holdings in that state. The new road will be extended gradually through its timber property.

TEXAS & PACIFIC.—The reconstruction of machine shop facilities at Marshall, Tex., to replace those destroyed by fire during 1918, will consist of extensions to the present buildings and boiler shops, one part of which will be set aside for machine shop purposes. The cost of the building work proper is estimated at \$250,000, in addition to which new and improved machinery will be installed.

SEABOARD AIR LINE.—A contract has been given to C. E. Hillyer, Jacksonville, Fla., for the reconstruction of the burned portion of the Hutchinson Island Terminal facilities of the Seaboard Air Line, near Savannah, Ga., destroyed by fire on February 14. The work will consist of the restoration of sheds, docks, wharves, and other facilities, and is expected to be finished in time to handle the fall business at these terminals.

THE WHITNEY COMPANY RAILROAD, DETROIT, MICH.—This company has awarded a contract to Rajotte, Fobert & Winters, Spokane, Wash., for the construction of a 12½-mile standard gage railroad extending from Tillamook Bay, Ore., along the Kilches river to a tract of timber owned by the Whitney company. It is estimated that the work will involve 152,000 yards of excavation. About 507,000 feet of lumber will be required for trestles and bridges.

# ANNUAL REPORT

## Southern Pacific Company—Report of the Board of Directors

NEW YORK, N. Y., July 10, 1919.

TO THE STOCKHOLDERS OF THE SOUTHERN PACIFIC COMPANY:

Your Board of Directors submits this report of the operations and affairs of the Southern Pacific Company and of its Proprietary Companies for the fiscal year ended December 31, 1918.

On December 28, 1917, the President of the United States took over the possession, control, and operation of your Company's railroad and steamship lines, under terms and conditions which thereafter were embodied in the Act of Congress of March 21, 1918, which was printed in full in the annual report for 1917, and briefly summarized on pages 24 and 25 of that report.

This Act authorized the President, or his representative, the Director General of Railroads, to enter into an agreement with the individual railroads whose properties had been taken over, to fix the compensation and to provide also for up-keep, betterments and additions, accounting, payment of compensation, deductions from compensation, etc. Soon after the passage of the Act, representatives of the Director General and of the railroads began a series of conferences in the effort to agree upon appropriate standard clauses for such agreements. As a result of prolonged discussion a standard form of contract was drafted, which the representatives of the railroads reported to be the best obtainable. The directorates of substantially all other railroads reached the same conclusion as did your Directors after careful consideration; that this standard form of contract was the best that could be obtained, and was far preferable to the alternative of possession and operation of your properties until the end of Federal control without any agreement whatsoever; your compensation to be determined thereafter in a suit to be brought in the Court of Claims.

Resolutions authorizing your Board to enter into an agreement with the Director General along the lines of the standard form of contract were adopted at a Special Stockholders' meeting on October 9, 1918, and similar action was taken by the stockholders of Proprietary Companies.

It remained to negotiate an agreement with the Director General on the basis of the standard form, with such modifications as the special features in the case of our properties rendered necessary or desirable. After protracted negotiations we reached a form of agreement as satisfactory as could reasonably be expected. Accordingly, on February 19, 1919, an agreement was duly executed between the Director General of Railroads, on the one part, and, on the other, the Southern Pacific Company and the following Proprietary Companies: Arizona Eastern Railroad Company; Houston & Texas Central Railroad Company; The Galveston, Harrisburg & San Antonio Railway Company; Texas & New Orleans Railroad Company; The Houston, East & West Texas Railway Company; Houston & Shreveport Railroad Company; Morgan's Louisiana & Texas Railroad & Steamship Company; Louisiana Western Railroad Company; Lake Charles & Northern Railroad Company; and Iberia & Vermilion Railroad Company. For mutual convenience the Southern Pacific Company and the Proprietary Companies were united in one contract.

The departures in the agreement from the standard form were made at our suggestion, and were generally in accord with our contentions. For example, special clauses inserted in the standard form secured a continuance during Federal control of our hospital system, and provided in a satisfactory way for the up-keep and return of the steamships. We succeeded in securing \$400,000 per year, in addition to the "standard return," on account of new ships acquired between July 1 and December 31, 1917, and a fair rental to be paid by the Director General for such space as his operating force may occupy in the new office building at San Francisco.

The Federal Control Act provides that the annual compensation (called "standard return") shall not exceed a sum equivalent, as nearly as may be, to the average annual railway operating income for the three test years ended June 30, 1917, unless, because of exceptional conditions, such basis of earnings is "plainly inequitable as a fair measure of just compensation." Such Act further provides that the Interstate Commerce Commission shall ascertain and certify to such standard return. This certification has been made "subject to such changes and corrections as the Commission may hereafter determine and certify to be requisite in order that the accounts and reports of the Company used by the Commission as the basis of computing said average annual railway operating income may be brought into conformity with the accounting rules or regulations of the Commission in force at the time of such accounting, or in order to correct computations based on such accounts or reports."

In making its certificate, the Interstate Commerce Commission has arbitrarily reduced the amount of the standard return of the Southern Pacific System lines by \$328,487.22 on account of war taxes, and by \$65,569.83 on account of payments to employees under the Adamson law, or a total deduction of \$394,057.05. Although these deductions represent amounts entered in the accounts subsequent to the test period, the Commission takes the position that such amounts are applicable to that period. As a determination of these amounts was not possible during the test period, and as the same action was taken by the Commission with respect to the standard return of all railroads under Federal control, vigorous protest was made at a public hearing against the making of these deductions. This arbitrary act will have the effect of reducing the compensation of your Company by \$394,057.05 for every year of Federal control.

The standard return as fixed in the agreement with the Director General was arrived at as follows:

Average annual railway operating income, years ended June 30, 1915, 1916, and 1917.....	\$47,955,769.87
Rental for ships not in service during test period .....	400,000.00
	\$48,355,769.87

<b>Less:</b>	
Arbitrary deduction by Interstate Commerce Commission, as explained above.....	\$394,057.05
Operating income of Inter-California Railway in Mexico, not taken over.....	1,814.74
	395,871.79

Amount of standard return..... \$47,959,898.08

Divided as follows:

Southern Pacific Company.....	\$38,421,846.79
Arizona Eastern Railroad Company.....	1,242,474.82
Houston & Texas Central Railroad Company .....	1,717,505.76
Galveston, Harrisburg & San Antonio Railway Company .....	3,230,644.60
Texas & New Orleans Railroad Company .....	715,135.69
Houston, East & West Texas Railway Company .....	375,565.53
Houston & Shreveport Railroad Company .....	85,031.76
Morgan's Louisiana & Texas Railroad & Steamship Company .....	1,188,525.58

Louisiana Western Railroad Company.....	895,178.49
Lake Charles & Northern Railroad Company .....	73,493.70
Iberia & Vermilion Railroad Company.....	14,495.36

Total ..... \$47,959,898.08

The contract of the Southern Pacific Terminal Company, which owns the dock and wharf facilities of your Company's lines at Galveston, Texas, has not yet been executed. Based on the operations for the three test years, the standard return to be paid by the Government for the use of such property would amount to..... 207,444.48

Making the total standard return on account of your Company's transportation system taken over by the Government... \$48,167,342.56

Note: It is now probable that all the properties of the Southern Pacific Terminal Company (those leased to the Public as well as those operated by the Government) will be treated as under Federal control. In this event the standard return of that company will be increased by the average annual rentals received from leased properties during the test period, and its other corporate income will be decreased by the amount of rentals received during the year.

To December 31, 1918, \$16,000,000.00 was received from the Director General of Railroads on account of the above-mentioned standard return. Between December 31, 1918, and July 10, 1919, further payments have been made aggregating \$24,375,000, of which \$14,000,000 was paid in cash and \$10,375,000 in certificates of indebtedness.

Under the agreement with the Director General of Railroads, the Railroad Administration took over certain operating assets, and assumed the collection and payment for account of the corporations of certain other assets and liabilities. The state of the accounts between the Director General of Railroads, and the various corporations as a whole is shown in the combined balance sheet.

The table showing the results of Federal operations during 1918 compared with the standard return agreed upon with the Director General shows that the Federal income for 1918 exceeded the standard return by \$7,757,935.04, or 16.11 per cent.

In order to preserve the continuity of statistics of operations for historic purposes, statements, in the usual form, covering operations by the Government of Southern Pacific System lines during the calendar year 1918, have been embodied in this report.

As a rule, the officers having immediate supervision of the maintenance and operation of your Company's lines at the time such lines were taken over by the Government, continued, as Federal appointees, to supervise the maintenance and operation of your properties under Federal control. The principal exceptions to this rule were (a) the Houston, East & West Texas Railway, and the Houston & Shreveport Railroad; and (b) the Houston & Texas Central Railroad. In June, 1918, the President of the Kansas City Southern Railway was appointed Federal Manager of the former, and the President of the Gulf Coast Lines was appointed Federal Manager of the latter. On March 1, 1919, however, these three lines were restored to the jurisdiction of Mr. W. B. Scott, their former President, who is now Federal Manager of all your Company's lines in Louisiana and Texas.

The Board takes this opportunity to express its appreciation of the courtesies extended by Federal officers and employees, in furnishing your Company with information concerning the maintenance and operation of your properties by the Federal Administration.

The operating revenues, operating expenses, and net revenue from railway operations of the first year of Federal control, compared with the last year of private control are:

	1918	1917	+ Increase	Per Cent
Operating revenues.....	\$221,611,206.21	\$193,971,489.54	+\$27,639,716.67	14.25
Operating expenses.....	162,722,371.84	120,601,822.82	+ 42,120,549.02	34.93
Net revenue from railway operations.....	58,888,834.37	73,369,666.72	— 14,480,832.35	19.74

The operating revenues in 1918 exceeded those of 1917 by nearly \$28,000,000, the effect of 25 per cent. increase in Southern Pacific freight rates and 14 per cent. increase in Southern Pacific passenger rates (following orders of the Director General for a general advance of 25 per cent. in freight rates and in passenger rates to a minimum of three cents per mile, made in June, 1918), an increase of 9.85 per cent. in passengers carried one mile, and a decrease of 4.87 per cent. in ton miles of revenue freight.

The movement of United States troops contributed substantially to the passenger revenue which was augmented by the additional rates of fare that were charged to passengers traveling in Pullman cars, established June 16th, but withdrawn December 1st.

While the citrus fruit crop of California and the cotton crops of Louisiana and Texas were less than normal, the Pacific Coast crop of deciduous fruit was unusually large—so were the movements of live stock and packing house products. Prior to the armistice there was a great demand for the canned products of California; the copper mines and smelters were operating at their maximum and consuming a heavy volume of fuel; the lumber business was stimulated by the construction of war plants and aeroplanes; and a substantial traffic resulted from shipbuilding on the Pacific Coast and other activities of the war. During the year 1918, the ton miles of freight handled by western lines were 1.6 per cent., and, by all lines under Federal control, 1.8 per cent., in excess of the preceding year.

These conditions, combined with the absence of regular steamship service through the Panama Canal and along the Pacific Coast, would have insured to your lines under the management of your own organization a volume of traffic at least equal to that of the calendar year 1917, which produced the largest gross earnings in the history of the Company; but, after the management of your lines was taken out of the hands of your officers, the closing of the traffic agencies through which daily intercourse with your patrons had been maintained, the disturbance of the relationship of both rates and service to the disadvantage of your lines, and the diversion of traffic to competitive routes, resulted in your rail lines transporting 653,707,093 ton miles of freight less than handled during the preceding year, a decrease of 4.87 per cent.

The increase of \$42,120,549 in operating expenses absorbed not only all of this increase in revenue but over \$14,000,000 more, resulting in a decrease in net revenue from railway operations of \$14,480,832, or 19.74 per cent. In other words, it cost \$1.52 to earn every additional dollar of operating revenues. The very heavy increase in operating expenses is attributable largely to advances made in the rates of pay of employees and to increases in the cost of materials.

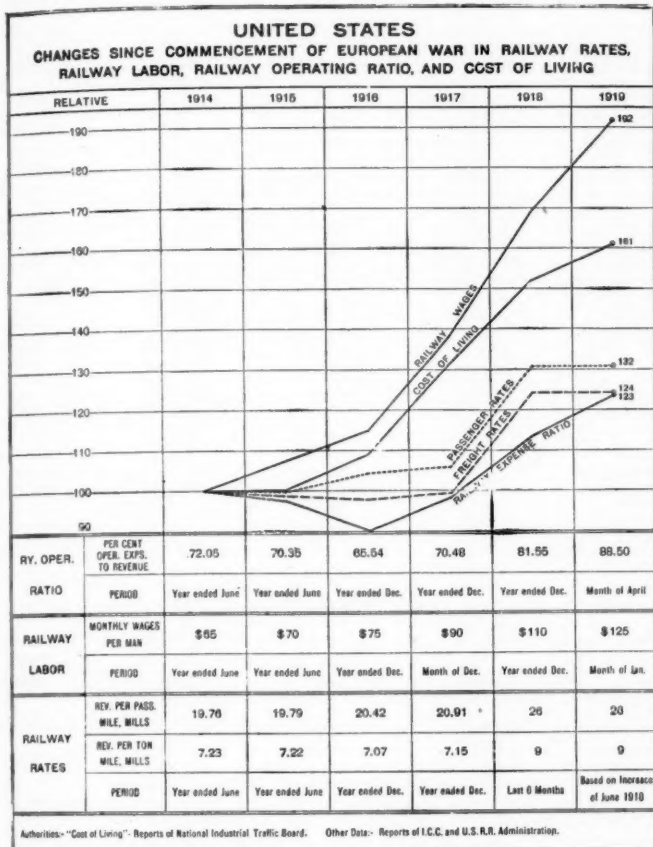


These increases itemized are:

Increased wages .....	\$23,658,000
Increased prices paid for fuel.....	6,141,000
Increased prices paid for other materials.....	4,539,000

Total increases in wages and material prices.. \$34,338,000

The difference between the total of these items and the total increase of



\$42,120,549 in operating expenses was caused, in the main, by reductions in hours of service, fall in efficiency, etc.

The effect of increases in rates on revenues was felt in the last half

of the year only. Many of the increases in rates of pay were made retroactive to the 1st of January, 1918, but as many demands for increased pay were pending at the close of the year and have since been granted in whole, or in part, it is evident from the net income derived from the operation of your properties by the United States Railroad Administration in the first quarter of 1919 that the increases in passenger and freight rates made in 1918 are not sufficient now, and probably will not be sufficient when the properties are returned to their owners, to pay operating expenses, fixed charges, taxes, and reasonable dividends. A further increase is necessary, unless the volume of traffic should increase to an extent that cannot reasonably be expected.

The popular impression of the effect of an increase in rates on living costs is grossly exaggerated, and there is no doubt that the fear of greatly increasing living costs influenced the public and the Interstate Commerce Commission, through the pressure of public opinion, to deny the petitions of the carriers for higher rates to produce an increase in revenue commensurate with the rises in costs of labor and material. To show how slight a foundation exists for this belief, and how exaggerated is the popular conception of this influence, the following figures are adduced:

In the period from 1910 to 1919 the price of dressed beef originating in Chicago and transported to New York increased from 22½ cents to 40 cents per pound, or, expressed in our smallest unit of value, 175 mills, while the freight rate increased 2.4 mills, or only 1.4 per cent.

The price per pound of ham and bacon transported between the same points increased 205 mills, whereof the increase in freight rate was responsible for 1½ mills, or only 0.73 per cent.

The increase in the cost of a suit of underwear transported from Boston to Chicago in the period 1910 to 1919 was 1.250 mills, to which the increase in freight rate contributed 3 mills, or 0.25 per cent.

A pair of shoes, transported from Boston to Chicago in the same period, increased in price 3.500 mills, of which the increase in freight rate was responsible for 6 mills, or 0.16 per cent.

No coin is small enough to represent any of these increases in cost, but if the dealer should add one copper cent in each case to the 1910 prices, to reimburse him for the increased cost of his commodity due to increased freight rates, he would grossly overcharge the purchaser in every case. He would make him pay nearly double the proper amount in the case of a pair of shoes, and over six times the proper amount in the case of a pound of ham or bacon.

The accompanying diagram illustrates the slight influence of rates on the cost of living, as to all railroads in the United States. It shows no substantial increase of rates from 1916 to 1917, yet the cost of living rose rapidly; there was a large increase of rates from 1917 to 1918, yet the speed of rise in the line of cost of living was perceptibly checked.

Although at the time your property was taken over by the Government your Company had orders outstanding for 57 locomotives, 41 passenger-train cars, and 718 freight-train cars, and had under construction in its own shops 56 locomotives and 3,808 freight-train cars, making a total of 113 locomotives, 41 passenger-train cars, and 4,526 freight-train cars, for which provision had been made, it was, nevertheless, forced to agree, as a condition precedent to the execution of its contract with the Director General of Railroads, to purchase from the Director General 1,000 box cars, at a total cost of \$3,050,000. In the standard contract agreed to by him with the carriers, the Director General obligates himself not to "acquire any motive power, cars, or other equipment at the expense, or on the credit, of the Companies in excess of what in his judgment is necessary, in addition to their then existing equipment, to provide for the traffic requirements of their own systems of transportation." Notwithstanding the Companies' books showed that traffic requirements of their own system larger than those of 1918 had been provided for, and that in addition its freight equipment had earned net rentals enough on other lines to average \$1,227,533 annually for the four years next preceding the date of Federal control; this and all other arguments presented to the Director General were met by a refusal to execute the contract with your Company unless

	Federal Operations Calendar Year 1918.	Standard Return. (Average for three test years.)	+ Increase. - Decrease.	Per Cent.
1. Average miles of road operated.....	11,101.54	10,978.24	+ 123.30	1.12
<b>RAILWAY OPERATING REVENUES.</b>				
2. Freight .....	\$151,079,622.80	\$101,747,133.36	+ \$49,332,489.44	48.49
3. Passenger .....	55,247,921.76	39,561,045.08	+ 13,686,876.68	34.60
4. Mail and express.....	7,839,380.77	6,421,614.92	+ 1,417,765.85	22.08
5. All other transportation.....	3,548,305.77	3,031,278.29	+ 517,027.48	17.06
6. Incidental .....	5,851,254.45	4,334,867.84	+ 1,516,386.61	34.98
7. Joint facility—Credit .....	83,207.96	73,812.71	+ 9,395.25	12.73
8. Joint facility—Debit .....	38,487.30	21,556.67	+ 16,930.63	78.54
9. Total railway operating revenues.....	\$221,611,206.21	\$155,148,195.53	+ \$66,463,010.68	42.84
<b>RAILWAY OPERATING EXPENSES.</b>				
10. Maintenance of way and structures.....	\$25,824,725.78	\$17,454,799.31	+ \$8,369,926.47	47.95
11. Maintenance of equipment.....	40,747,834.97	22,266,303.00	+ 18,481,531.97	83.00
12. Total maintenance .....	\$66,572,560.75	\$39,721,102.31	+ \$26,851,458.44	67.60
13. Traffic .....	\$2,249,360.43	\$3,075,420.97	- \$826,060.54	26.86
14. Transportation .....	86,084,897.92	50,609,283.12	+ 35,475,614.80	70.10
15. Miscellaneous operations .....	3,330,398.66	2,302,300.04	+ 1,028,098.62	44.66
16. General .....	4,925,247.01	4,127,596.09	+ 797,650.92	19.32
17. Transportation for investment—Credit.....	440,092.93	366,183.75	+ 73,909.18	20.18
18. Total railway operating expenses.....	\$162,722,371.84	\$99,469,518.78	+ \$63,252,853.06	63.59
19. Net revenue from railway operations.....	\$58,888,834.37	\$55,678,676.75	+ \$3,210,157.62	5.77
20. Railway tax accruals.....	\$9,398,681.08	\$7,889,370.26	+ \$1,509,310.82	19.13
21. Uncollectable railway revenues.....	59,675.69	52,636.73	+ 7,038.96	13.17
22. Railway operating income.....	\$49,430,477.60	\$47,736,669.76	+ \$1,693,807.84	3.55
23. Equipment rents (Net credit).....	†3,661,808.59	*61,363.13	+ 3,723,171.72	.....
24. Joint facility rent (Net credit).....	195,689.66	92,035.93	+ 103,653.73	111.97
25. Rental for steamships not in service during test period.....	.....	400,000.00	- 400,000.00	.....
26. Net of items 22, 23, 24, and 25.....	\$53,287,375.85	\$48,167,342.56	+ \$5,120,033.29	10.63
27. Miscellaneous income .....	104,901.62	.....	+ 104,901.62	.....
28. Expenses in excess of revenues prior to January 1, 1918, included in above but charged against corporation.....	2,533,000.13	.....	+ 2,533,000.13	.....
29. Federal income for 1918 from operation of Southern Pacific Lines taken over by Government.....	\$55,925,277.60	.....	.....	.....
30. Standard return .....	.....	\$48,167,342.56	.....	.....
31. Federal income for 1918, in excess of standard return.....	.....	.....	+ \$7,757,935.04	16.11

†Represents principally, rental for steamships under charter to U. S. Shipping Board, the earnings from which steamships during the test period were included in railway operating revenues. \*Debit.

it accepted the allotment of cars that were clearly not needed for the traffic of their own system. As your Directors were compelled to make the sorry choice between Government operation of your properties without a contract and consequent litigation in the Court of Claims after the end of Federal control for compensation during Government possession; or to accept and pay for 1,000 cars of poor design and excessive cost that your Company did not need, they yielded to major force and accepted the allotment of 1,000 cars as the lesser of the two evils.

The table on the preceding page shows the results of Federal operation of your Company's lines during 1918, compared with the standard return payable by the Government for the use of such property:

#### PROPERTIES AND MILEAGE

The transportation lines, herein referred to as "Proprietary Companies," constituting the Southern Pacific System, operated by the Government at December 31, 1918, were as follows:

Divisions	First main track	Additional main track	Sidings	Ferries	Water lines
<b>A—MILEAGE OF LINES OWNED BY OR LEASED TO SOUTHERN PACIFIC COMPANY:</b>					
1. Owned lines .....	537.46	15.35	203.02	.....	4,400.00
2. Leased lines:					
(a) Central Pacific Railway .....	2,288.97	431.15	932.58	9.90	125.00
(b) Oregon & California Railroad .....	701.18	4.60	186.61	.....	.....
(c) Southern Pacific Railroad .....	3,431.53	200.42	1,504.44	3.00	.....
(d) South Pacific Coast Railway .....	106.70	20.46	49.21	3.00	.....
<b>B—MILEAGE OF LINES OWNED BY OR LEASED TO THE FOLLOWING COMPANIES:</b>					
1. Arizona Eastern R. R. Co. ....	377.74	.....	76.72	.....	.....
2. Houston & Texas Central R. R. Co. ....	887.25	12.94	264.26	.....	.....
3. Galveston, Harrisburg & San Antonio Ry. Co. ....	1,381.90	40.87	382.05	.....	.....
4. Texas & New Orleans R. R. Co. ....	469.65	8.78	220.26	.....	.....
5. Houston, East and West Texas Ry. Co. ....	190.94	.....	58.28	.....	.....
6. Houston & Shreveport R. R. Co. ....	40.72	.69	7.20	.....	.....
7. Morgan's Louisiana & Texas R. R. & S. S. Co. ....	400.67	58.35	*250.50	3.00	.....
8. Louisiana Western R. R. Co. ....	207.74	.....	83.01	.....	.....
9. Lake Charles & Northern R. R. Co. ....	72.66	.....	11.37	.....	.....
10. Iberia & Vermilion R. R. Co. ....	21.44	.....	11.02	.....	.....
11. Southern Pacific Terminal Co. ....	.....	.....	25.68	.....	.....
Total .....	11,116.55	793.61	4,266.21	18.90	4,525.00
Less mileage used in connection with property of two or more of above companies and included in mileage of each .....	31.23	29.99	29.84	.....	.....
Total miles of road operated by Government at December 31, 1918 ..	†11,085.32	763.62	4,236.37	18.90	4,525.00
Total miles of road operated by company at December 31, 1917 .....	11,164.35	560.70	4,149.74	18.90	4,525.00
Increase .....	.....	202.92	*86.63	.....	.....
Decrease .....	79.03	.....	.....	.....	.....
Average miles of road operated by Government during year 1918 .....	11,101.54	616.84	.....	.....	.....

\*Includes 18.92 miles of sidings, operated under trackage rights, omitted from last year's report. †Includes 2.48 miles owned jointly with other companies, 4.87 miles leased from other companies, and 126.39 miles operated under trackage rights; and excludes 32.61 miles of owned lines leased to other companies.

In addition to the mileage above tabulated, the Southern Pacific Company solely controls through ownership of capital stock, 865.46 miles of electric lines and 1,240.52 miles of the Southern Pacific R. R. Co. of Mexico; and jointly controls (through ownership of capital stock in equal proportions

with the Atchison, Topeka & Santa Fe Ry. Co.) 507.06 miles of the North-western Pacific Railroad, and 59.66 miles of the Sunset Railway, a GRAND TOTAL OF 13,758.02 MILES.

#### INCOME ACCOUNT SOUTHERN PACIFIC COMPANY AND PROPRIETARY COMPANIES, COMBINED (Excluding offsetting accounts)

	Year ended December 31, 1918	Year ended December 31, 1917	+ Increase — Decrease	Per cent
1. Standard return .....	\$48,167,342.56	.....	+ \$48,167,342.56	.....
<b>OPERATING INCOME</b>				
2. Operating revenues .....	.....	\$193,971,489.54	— \$193,971,489.54	.....
3. Operating expenses .....	.....	120,661,822.82	— 120,661,822.82	.....
4. Net revenue from railway operations .....	.....	\$73,369,666.72	— \$73,369,666.72	.....
5. Railway tax accruals .....	.....	\$13,792,176.17	— \$13,792,176.17	.....
6. Uncollectible railway revenues .....	.....	70,237.57	— 70,237.57	.....
7. Railway operating income .....	.....	\$59,507,252.98	— \$59,507,252.98	.....
8. Equipment rents .....	.....	2,604,342.35	— 2,604,342.35	.....
9. Joint facility rents .....	.....	141,609.95	— 141,609.95	.....
10. Total of items 7, 8 and 9 .....	.....	\$62,253,205.28	— \$62,253,205.28	.....
11. Revenues from miscellaneous operations .....	\$20,397,863.81	\$12,798,435.07	+ \$7,599,428.74	.....
12. Expenses of miscellaneous operations .....	15,921,426.68	7,127,017.02	+ 8,794,409.66	123.40
13. Net revenue from miscellaneous operations .....	\$4,476,437.13	\$5,671,418.05	— \$1,194,980.92	21.07
14. Taxes on miscellaneous operating property .....	159,239.86	99,860.02	+ 59,379.78	59.46
15. Miscellaneous operating income .....	\$4,317,197.37	\$5,571,558.03	— \$1,254,360.70	22.51
16. Total of items 1, 10 and 15 .....	\$52,484,539.89	\$67,824,763.31	— \$15,340,223.42	22.62
<b>NONOPERATING INCOME</b>				
17. Income from lease of road .....	\$27,031.90	\$29,149.86	— \$2,117.96	7.27
18. Miscellaneous rent income .....	683,722.22	421,114.42	+ 262,607.80	62.36
19. Miscellaneous nonoperating physical property .....	420,681.73	263,375.18	+ 157,306.55	59.73
20. Separately operated properties—Profit .....	50,176.24	20,960.34	+ 29,215.90	139.39
21. Dividend income .....	2,304,208.06	2,388,650.65	— 84,442.59	3.54
22. Income from funded securities—Bonds and notes—Affiliated and other companies .....	2,297,166.57	2,188,594.29	+ 108,572.28	4.96
23. Income from funded securities—Investment advances—Affiliated companies .....	298,335.09	542,138.18	— 243,803.09	44.97
24. Income from unfunded securities and accounts .....	556,093.61	1,045,011.18	— 488,917.57	46.79
25. Income from sinking and other reserve funds .....	714,439.71	687,322.39	+ 27,117.32	3.95
26. Miscellaneous income .....	102,839.25	112,926.88	— 10,087.63	8.93
27. Revenues prior to January 1, 1918 .....	535,046.94	.....	+ 535,046.94	.....
28. Total nonoperating income .....	\$7,989,741.32	\$7,699,243.37	+ \$290,497.95	3.77
29. Gross income .....	\$60,474,281.21	\$75,524,006.68	— \$15,049,725.47	19.93
<b>DEDUCTIONS FROM GROSS INCOME</b>				
30. Rent for leased roads .....	.....	\$168,315.91	+ \$161,273.02	95.82
31. Miscellaneous rents .....	\$329,588.93	519,068.06	+ 189,479.13	13.74
32. Miscellaneous tax accruals .....	590,407.88	630,176.48	+ 39,768.60	8.61
33. Railway tax accruals—War taxes .....	684,460.70	.....	.....	.....
34. Interest on funded debt—Bonds and notes .....	1,707,269.24	.....	+ 1,707,269.24	.....
35. Interest on funded debt—Nonnegotiable debt to affiliated companies ..	23,767,103.53	24,219,075.12	— 451,971.59	1.87
36. Interest on unfunded debt .....	114,256.18	284,996.66	— 170,740.48	59.91
37. Amortization of discount on funded debt .....	146,352.61	34,279.10	+ 112,073.51	326.94
38. Corporate operating expenses .....	286,965.82	217,216.81	+ 69,749.01	32.11
39. Miscellaneous income charges .....	726,191.58	138,737.17	+ 587,454.41	423.43
40. Expenses prior to January 1, 1918 .....	368,721.49	182,724.49	+ 186,000.00	101.79
.....	3,068,047.07	.....	+ 3,068,047.07	.....
41. Total deductions from gross income .....	\$31,789,365.03	\$26,394,589.80	+ \$5,394,775.23	20.44
42. Net income .....	\$28,684,916.18	\$49,129,416.88	— \$20,444,500.70	41.61



	Year ended December 31, 1918	Year ended December 31, 1917	+ Increase — Decrease	Per cent
<b>DISPOSITION OF NET INCOME</b>				
43. Income applied to sinking and other reserve funds.....	\$997,111.48	\$978,096.81	+ \$19,014.67	1.94
44. Dividend appropriations of income.....	\$16,404,509.25	.....	+ 16,404,509.25	.....
45. Total appropriations .....	\$17,401,620.73	\$978,096.81	+ \$16,423,523.92	.....
46. Income balance transferred to credit of profit and loss.....	\$11,283,295.45	\$48,151,320.07	— \$36,868,024.62	76.57
47. Per cent of net income on outstanding capital stock of Southern Pacific Company .....	10.38	17.65	— 7.27	41.19

†Includes \$454.00 dividends on stocks of Proprietary Companies held by the Public. \*Dividends in 1917 were paid out of accumulated surplus.

#### OPERATING INCOME.

Miscellaneous Operating Income (line No. 15), substantially all of which represents the operating results of the California Fuel Oil Department of Southern Pacific Company, shows a decrease of \$1,254,360.70. This decrease is made up, principally, of a decrease of \$3,449,321.43, due to a decrease in the net operating income for the eight months to December 31, 1918, compared with the corresponding period of last year, less an increase of \$2,195,522.16, representing the net operating income for the first four months of this year, last year's figures having included operations only for the eight months following April 30, 1917, when the Fuel Oil Department was taken over from the Kern Trading & Oil Company. The decrease of \$3,449,321.43 is due, principally, to a decrease of \$1,656,757.02 in net revenue from produced oil, and to an increase in operating expenses, the result of including therein this year drilling expenditures for the year amounting to \$1,773,820.50, similar expenditures theretofore not having been included in operating expenses.

#### NONOPERATING INCOME.

Of the increase of \$262,607.80 in Miscellaneous Rent Income (line No. 18), \$156,188.72 represents the amount due from the United States Railroad Administration for rental of that portion of the office building at San Francisco occupied by Federal forces; and \$33,994.08, represents similar rentals collected from others for space occupied in such building, corresponding rentals received last year for space in the Flood Building having been dealt with as an offset against the rent paid for the latter building.

The increase of \$157,306.55 in Miscellaneous Nonoperating Physical Property (line No. 19) is due, principally, to an increase in the net income from lands belonging to the Central Pacific Railway Company.

The increase of \$29,215.90 in Separately Operated Properties—Profit (line No. 20) is due, principally, to this Company's proportion of increased profits from operation of Pintsch gas plants at Houston and Portland.

The decrease in Dividend Income (line No. 21) is due, principally, to the fact that last year's income included \$64,405.16 representing liquidating dividends of companies whose properties were sold to Central Pacific Railway Company and to Southern Pacific Railroad Company as set forth on page 6 of last year's report.

The increase in Income from Funded Securities—Bonds and Notes (line No. 22) is due, principally, to the increase in interest received on Liberty Loan bonds.

The decrease in Income from Funded Securities—Investment Advances (line No. 23) is the result, principally, of including in this account last year interest, previously held in suspense, on construction advances repaid last year.

The decrease of \$488,917.57 in Income from Unfunded Securities and Accounts (line No. 24) is the result, principally, of the decrease in interest received on surplus funds, the surplus funds on hand at December 31, 1917, having been exhausted in payment of interest, dividends, and other obligations of the Company before any advances on account of our standard return were received from the Government. As complete data necessary for the computation of interest on the accounts with the Government have not been furnished by the Federal Administration, the income account on page 13 does not include such interest. It is estimated, however, that the interest due to the Company is in excess of the interest due to the Government.

The credit to Revenues Prior to January 1, 1918 (line No. 27), is explained below in connection with the debit to Expenses Prior to January 1, 1918 (line No. 40).

#### DEDUCTIONS FROM GROSS INCOME.

The increase of \$161,273.02 in Rent for Leased Roads (line No. 30) is the result, principally, of a rental payment amounting to \$135,000, covering the period from January 1, 1912, to December 31, 1917, in controversy for several years, which was paid during the year.

#### DEDUCTIONS FROM GROSS INCOME.

The increase of \$71,339.82 in Miscellaneous Rents (line No. 31) is due, principally, to the fact that last year, following the taking over of the Company's ships by the U. S. Shipping Board, as explained in the tenth paragraph under "Operating Income" on page 8 of last year's report, the rental for piers at New York, New Orleans, and Galveston was charged to the account of the Government.

The increase of \$54,284.22 in Miscellaneous Tax Accruals (line No. 32) is due, principally, to an increase of \$43,386.65 in taxes on lands covered by Central Pacific Railway Company Three and One-Half Per Cent Mortgage.

The increase of \$1,707,269.24 shown against Railway Tax Accruals—War Taxes (line No. 33) is caused by the fact that the war taxes for last year are included in the item of \$13,792,176.17 reported against Railway Tax Accruals (line No. 5).

The decrease of \$451,971.59 in Interest on Funded Debt—Bonds and Notes (line No. 34) is due, principally, to the conversion of \$3,619,500 of Five Per Cent Convertible Bonds into common stock; to the redemption of \$1,641,000 of Equipment Trust Certificates; and to the acquisition by the Southern Pacific Company of the \$3,839,000 of Morgan's Louisiana & Texas Railroad & Steamship Company Main Line First Mortgage Seven Per Cent Bonds, which matured April 1, 1918, the interest on which has been excluded, in the income statement both from Interest on Funded Debt (line No. 34), and from Income from Funded Securities (line No. 22).

The decrease in Interest on Funded Debt—Nonnegotiable Debt to Affiliated Companies (line No. 35) is the result of reductions in the indebtedness of Southern Pacific Company to Affiliated Companies.

The increase in Interest on Unfunded Debt (line No. 36) represents, principally, the interest paid on funds borrowed for the purchase of Liberty Loan Bonds.

The increase of \$69,749.01 in Amortization of Discount on Funded Debt (line No. 37) is the result, principally, of the retirement during the year of \$3,619,500, par value, of Five Per Cent Twenty-Year Convertible Gold Bonds in exchange for a like amount of common stock issued.

The amount shown in the column for last year as Corporate Operating Expenses (line No. 38) was dealt with last year as Maintenance of Invest-

ment Organization. The increase of \$587,454.41 represents the salaries and expenses of corporate officers and employees at New York, San Francisco, Houston, New Orleans, and Tucson necessary to administer the corporate affairs of the companies and to protect their interest during Federal control. Although the salaries and expenses of such officers and employees were charged to operating expenses during the test period, thereby reducing the average annual railway operating income upon which the standard return was based, the Director General refused to bear any portion thereof after the appointment of Federal Managers.

The increase in Miscellaneous Income Charges (line No. 39) is the result of an adjustment on account of Federal income taxes, payable by the companies, on the interest on tax-exempt bonds.

The credits to Revenues Prior to January 1, 1918 (line No. 27), and the debits to Expenses Prior to January 1, 1918 (line No. 40) represent, respectively, the collection and payment during the year, through the Federal Administration, of revenues and expenses, commonly called "lap-over" items, applicable to the period prior to January 1, 1918. As these lap-over items represent assets and liabilities of the corporation, the Interstate Commerce Commission instructed that they be taken into the Corporation's income account and this has been done. Inasmuch, however, as the standard return is based on the average annual railway operating income for a three-year period the Corporation's income for the year is complete without including these lap-over items, and it would seem, therefore, that such items either should be held in suspense to be included in the operations in the year following the end of Federal control when similar lap-over items will be credited or charged, as the case may be, to the Government, or should be dealt with as profit and loss items. The effect, therefore, of obeying the Commission's instructions is to *understate the income for the year* by \$2,533,000.13. This, added to the effect of excluding Corporate Expenses from Operating Expenses during Government Control, *reduces the income account* by \$3,120,454.54. Otherwise stated the addition of this amount to Net Income (line No. 42) *would increase it 10.87 per cent.*

#### DEDUCTIONS FROM GROSS INCOME

On December 31, 1918, the principal of advances to the Southern Pacific Railroad Company of Mexico amounted to \$39,792,065.33. Interest accruing on these advances has not been taken into the income of the Southern Pacific Company.

#### CAPITAL STOCK

The capital stock of the Southern Pacific Company outstanding at the beginning of the year amounted to..... \$272,823,405.64

Issued during the year:

Common stock issued in exchange for a like amount of Five Per Cent Twenty-Year Convertible Gold Bonds surrendered and cancelled..... 3,619,500.00

Amount of Southern Pacific Company capital stock outstanding December 31, 1918..... \$276,442,905.64

The common and preferred capital stocks of Proprietary Companies outstanding at the beginning of the year amounted to..... \$349,082,400.00

Add:

Capital stock of Marion & Linn County Railroad Company, which has not heretofore been dealt with as a Proprietary Company. 250,000.00

\$349,332,400.00

Deduct:

Capital stock of Inter-California Railway Company, which company is dealt with this year as an Affiliated Company ..... 2,500,000.00

Total capital stocks of Proprietary Companies outstanding December 31, 1918..... \$346,832,400.00

Capital stocks of Proprietary Companies outstanding December 31, 1918, were held as follows:

In hands of public..... \$76,100.00

Owned by Southern Pacific Company \$346,456,300.00

Owned by Morgan's Louisiana & Texas Railroad & Steamship Company ..... 300,000.00

346,756,300.00

\$346,832,400.00

#### FUNDED DEBT

The funded and other fixed interest-bearing debt of the Southern Pacific Company and of its Proprietary Companies, outstanding December 31, 1917, was as follows:

Southern Pacific Company..... \$206,657,610.00

Proprietary Companies ..... 456,471,651.33

Total outstanding December 31, 1917..... \$663,129,261.33

Deduct:

Funded debt of Inter-California Railway Company, which company is dealt with this year as an Affiliated Company ..... 850,000.00

\$662,279,261.33

## BALANCE SHEET

## SOUTHERN PACIFIC COMPANY AND PROPRIETARY COMPANIES, COMBINED

ASSETS—DECEMBER 31, 1918, COMPARED WITH DECEMBER 31, 1917, EXCLUDING OFFSETTING ACCOUNTS

LIABILITIES—DECEMBER 31, 1918, COMPARED WITH DECEMBER 31, 1917, EXCLUDING OFFSETTING ACCOUNTS

Assets	December 31, 1918	December 31, 1917	Increase or decrease
<b>INVESTMENTS</b>			
Investment in road and equipment .....	\$996,741,568.97	\$982,028,004.54	\$14,713,564.43
Improvements on leased railway property.....	1,416,086.78	1,454,270.66	—\$38,183.88
Sinking funds .....	14,597,652.09	13,711,547.27	886,104.82
Deposits in lieu of mortgaged property sold....	935.30	916.88	18.42
Miscellaneous physical property .....	*31,805,766.84	30,778,341.24	1,027,425.60
Investments in affiliated companies:			
Stocks .....	273,317,127.61	273,313,261.65	3,865.96
Bonds .....	134,690,024.70	142,156,382.61	—7,466,357.91
Stocks } Cost insepara-			
Bonds } ble .....	12,192,301.70	12,192,301.70	—
Notes .....	873,654.99	567,571.43	306,083.56
Advances .....	107,667,866.75	95,331,020.65	12,336,846.10
Other investments:			
Stocks .....	156,710.29	158,971.29	—2,261.00
Bonds .....	16,282,632.34	14,466,777.00	1,815,855.34
Notes .....	6,436,716.11	7,217,023.61	—780,307.50
Advances .....	434,063.30	2,574,142.57	—2,140,079.27
Miscellaneous .....	1,847,845.29	313,124.25	1,534,721.04
Total .....	\$1,598,460,953.06	\$1,576,263,657.35	\$22,197,295.71
Cash .....	\$10,264,657.88	\$11,733,162.61	—\$1,468,504.73
<b>CURRENT ASSETS</b>			
Demand loans and deposits .....		4,500,000.00	—4,500,000.00
Time drafts and deposits .....		15,500,000.00	—15,500,000.00
Special deposits .....	59,287.52	87,728.17	—28,440.65
Loans and bills receivable .....	3,351,520.52	4,050,388.38	—698,867.86
Traffic and car-service balances receivable....	267,880.32	1,997,112.74	—1,729,232.42
Net balance receivable from agents and conductors .....		7,499,834.43	—7,499,834.43
Miscellaneous accounts receivable .....	3,503,017.08	9,174,317.16	—5,671,300.08
Material and supplies .....	†1,692,207.19	24,406,115.91	—22,713,908.72
Interest and dividends receivable .....	2,239,583.11	2,590,309.52	—350,726.41
Rents receivable .....	1,667,116.12	1,845,219.51	—178,103.39
Other current assets....	46,824.40	74,639.29	—27,814.89
Total .....	\$23,092,094.14	\$83,458,827.72	—\$60,366,733.58
<b>ACCOUNTS WITH U. S. GOVERNMENT</b>			
Standard return for year 1918, \$48,167,342.56			
Less received on account, 16,000,000.00			
Cash and agents' and conductors' balances taken over January 1, 1918, revenues prior to January 1, 1918, and other corporate assets collected, etc. ....	\$32,167,342.56		\$32,167,342.56
Material and supplies, December 31, 1917....	23,581,109.84		23,581,109.84
Depreciation and other reserves .....	4,058,073.23		4,058,073.23
Road and equipment retired and not replaced.	431,432.86		431,432.86
Total .....	\$96,673,339.40		\$96,673,339.40
<b>DEFERRED ASSETS</b>			
Working fund advances.	\$46,928.08	\$103,434.45	—\$56,506.37
Other deferred assets....	5,493,027.77	4,017,883.74	\$1,475,144.03
Total .....	\$5,539,955.85	\$4,121,318.19	\$1,418,637.66
<b>UNADJUSTED DEBITS</b>			
Rents and insurance premiums paid in advance	\$122,184.72	\$135,618.35	—\$13,433.63
Discount on capital stock	3,988,600.00	5,959,083.45	—1,970,483.45
Discount on funded debt	3,331,811.05	3,682,526.87	—350,715.82
Other unadjusted debits.	5,121,547.86	11,454,127.36	—6,332,579.50
Securities issued or assumed—unpledged ...	\$5,849,425.00	5,720,675.00	128,750.00
Securities issued or assumed—pledged .....	231,750.00	713,000.00	—481,250.00
Total .....	\$12,564,143.63	\$21,231,356.03	—\$8,667,212.40
Total assets....	\$1,736,330,486.08	\$1,685,075,159.29	\$51,255,326.79

\*The value of the unsold Central Pacific Railway Company and Oregon & California Railroad Company land grant lands is not included in the above statement of assets. †Represents material and supplies of California Fuel Oil Department. ‡Excluded from total assets in accordance with regulations of Interstate Commerce Commission.

Liabilities	December 31, 1918	December 31, 1917	Increase or decrease
<b>STOCK</b>			
Capital stock of Southern Pacific Company.	\$276,442,905.64	\$272,823,405.64	\$3,619,500.00
Capital stock of Proprietary Companies .....	*346,832,400.00	349,082,400.00	—2,250,000.00
Total .....	\$623,275,305.64	\$621,905,805.64	\$1,369,500.00
<b>LONG TERM DEBT</b>			
Funded debt unmatured:			
Book liability .....	\$652,569,674.78	\$669,562,936.33	—\$16,993,261.55
Less held by or for company .....	6,081,175.00	6,433,675.00	—352,500.00
Actually outstanding:			
Southern Pacific Company .....	\$261,189,710.00	\$206,657,610.00	—\$5,467,900.00
Proprietary Companies .....	*445,298,789.78	456,471,651.33	—11,172,861.55
Total funded debt	\$646,488,499.78	\$663,129,261.33	—\$16,640,761.55
Non-negotiable debt to affiliated companies:			
Open accounts .....	3,227,258.81	2,829,872.25	\$397,386.56
Total .....	\$649,715,758.59	\$665,959,133.58	—\$16,243,374.99
<b>CURRENT LIABILITIES</b>			
Loans and bills payable	†\$6,050,000.00		\$6,050,000.00
Traffic and car service balances payable ....	94,353.40	\$2,661,701.70	—\$2,567,348.30
Audited accounts and wages payable .....	1,142,662.12	12,353,426.61	—11,210,764.49
Miscellaneous accounts payable .....	1,517,448.30	3,272,524.87	—1,755,076.57
Interest matured unpaid	6,296,515.21	5,520,303.01	776,212.20
Dividends matured unpaid .....	4,274,988.62	4,159,051.49	115,937.13
Funded debt matured unpaid .....	127,213.92	512,213.92	—385,000.00
Unmatured interest accrued .....	5,261,940.89	5,464,404.36	—202,463.47
Unmatured rents accrued	247,446.18	247,802.70	—356.52
Other current liabilities.	81,287.83	672,379.48	—591,091.65
Total .....	\$25,093,856.47	\$34,863,808.14	—\$9,769,951.67
<b>ACCOUNTS WITH UNITED STATES GOVERNMENT</b>			
Advances for additions and betterments ....	\$13,855,161.98		\$13,855,161.98
Advances for expenses prior to January 1, 1918, and other corporate liabilities paid, etc. ....	45,951,353.23		45,951,353.23
Total .....	\$59,806,515.21		\$59,806,515.21
<b>DEFERRED LIABILITIES</b>			
Other deferred liabilities	\$57,331.47	\$135,222.20	—\$77,890.73
<b>UNADJUSTED CREDITS</b>			
Tax liability .....	\$4,266,757.28	\$7,639,524.97	—\$3,372,767.69
Insurance and casualty reserves .....	3,264,555.78	3,158,472.00	106,083.78
Accrued depreciation—Road .....	††1,165,281.37	1,010,676.31	154,605.06
Accrued depreciation—Equipment .....	47,597,739.57	44,486,327.33	3,111,412.24
Accrued depreciation—Miscellaneous physical property .....	‡7,650,520.81	6,377,594.44	1,272,926.37
Other unadjusted credits	\$50,639,151.63	48,602,771.04	2,036,380.59
Total .....	\$114,584,006.44	\$111,275,366.09	\$3,308,640.35
<b>CORPORATE SURPLUS</b>			
Additions to property through income and surplus .....	\$1,271,691.65	\$351,906.71	\$919,784.94
Funded debt retired through income and surplus .....	21,566,803.76	21,087,445.45	479,358.31
Sinking fund reserves..	10,337,920.61	9,397,707.47	940,213.14
Appropriated surplus not specifically invested ..	3,818,177.83	3,818,177.83	—
Total appropriated surplus .....	\$36,994,593.85	\$34,655,237.46	\$2,339,356.39
Profit and loss—Balance .....	226,803,118.41	216,280,586.18	10,522,532.23
Total corporate surplus .....	\$263,797,712.26	\$250,935,823.64	\$12,861,888.62
Total liabilities....	\$1,736,330,486.08	\$1,685,075,159.29	\$51,255,326.79

\*The outstanding capital stock and funded debt include capital stocks and funded debt of Proprietary Companies of the par value of \$346,756,300 and \$102,190,216.41, respectively, a total of \$448,946,516.41, which securities are owned by the Southern Pacific Company or by Proprietary Companies, or are held in sinking funds of Proprietary Companies. The cost of these securities is included in the investments shown above. Of the said amount, stocks of the par value of \$249,653,161, which stand charged on the books at \$232,932,667.41, are pledged against the issue of Southern Pacific Company stock and bonds. †Represents notes issued in connection with the purchase of Liberty Loan Bonds. ††Represents accrued depreciation on electric power plants and substations, general office building at San Francisco, wood preserving works, Sacramento rolling mill, oil storage plants, grain elevators, and similar facilities. ‡Represents accrued depreciation on oil lands and improvements acquired from Kern Trading & Oil Company. §Represents, principally, interest on construction advances which have not been repaid.



## Retired during the year:

## SOUTHERN PACIFIC COMPANY.

San Francisco Terminal First Mortgage	
Four Per Cent Bonds:	
Purchased from payments to sinking fund	\$7,400.00
Five Per Cent Twenty-Year Convertible Gold Bonds:	
Retired in exchange for a like amount of common stock issued	3,619,500.00
Equipment Trust Certificates:	
Series A, Due March 1, 1918, paid off	\$1,012,000.00
Series B, Due September 1, 1918, paid off	201,000.00
Series C, Due December 1, 1918, paid off	117,000.00
Series D, Due May 1, 1918, paid off	511,000.00
	1,841,000.00

## CENTRAL PACIFIC RAILWAY COMPANY.

First Refunding Mortgage	
Four Per Cent Bonds:	
Purchased from payments to sinking fund	\$31,000.00
Four Per Cent Thirty-Five Year European Loan of 1911:	
Adjustment in converting from French francs to U. S. gold the \$24,726,905.78 of such bonds acquired by Southern Pacific Company to December 31, 1918	24.72
Three and One-half Per Cent Mortgage Gold Bonds:	
Purchased from proceeds of sale of lands	98,500.00
Purchased from payments to sinking fund	27,000.00
Extensions Purchase Notes:	
Due March 1, 1917, paid off	10,139,349.53
	10,295,874.25

## SOUTH PACIFIC COAST RAILWAY COMPANY.

First Mortgage Four Per Cent Bonds:	
Purchased from payments to sinking fund	8,000.00

## SOUTHERN PACIFIC RAILROAD COMPANY.

First Refunding Mortgage Four Per Cent Gold Bonds:	
Purchased from payments to sinking fund	14,000.00
TEXAS & NEW ORLEANS RAILROAD COMPANY.	
Payment to State of Texas account of School Fund Debt	4,987.30

Total retired during the year..... 15,790,761.55

Amount of funded and other fixed interest-bearing debt of the Southern Pacific Company and of its Proprietary Companies, outstanding December 31, 1918..... \$646,488,499.78

## The outstanding securities are held as follows:

In hands of public	\$544,298,283.36
Owned by Southern Pacific Company	\$87,342,216.42
Owned by Proprietary Companies	2,544,000.00
Held in sinking funds of Proprietary Companies	12,304,000.00
	102,190,216.42
Total	\$646,488,499.78

Under the terms of the indenture of June 1, 1909, securing the issue of Southern Pacific Company Four Per Cent Twenty-Year Convertible Gold Bonds, the holders of such bonds were given the privilege of converting their bonds at par into paid-up shares of the common stock of the Company at \$130 per share of \$100 par value on or before June 1, 1919. As such date, however, fell upon a Sunday the privilege was extended to and including June 2, 1919. Up to December 31, 1918, there had been converted bonds to the amount of \$662,090, and from January 1, 1919, to and including June 2, 1919, bonds to the amount of \$26,657,150 were converted, making a total of \$27,319,240 par value of bonds (or 33.39 per cent. of the \$81,814,000 of bonds issued), converted into \$21,014,800 par value of stock.

## LIBERTY LOAN

To enable the employees of your Company and of its affiliated companies to subscribe for Liberty Loan Bonds, they were permitted to subscribe through the Company for an amount of such bonds not exceeding twenty-five per cent of their yearly salaries, the Company advancing the subscription price of the bonds and charging interest on such advances at the bond rate, the amounts so advanced to be repaid to the Company by monthly salary deductions. The following statement shows the bonds of each issue subscribed for on behalf of employees and on behalf of the Company:

	First loan	Second loan	Third loan	Fourth loan	Fifth loan
Total number of employees subscribing	19,973	19,078	64,129	19,474	18,412
Per cent of employees subscribing to total employees	27%	27%	81%	164%	155%
Total amount subscribed for on behalf of employees	\$1,918,800	\$1,843,700	\$5,019,400	\$1,154,050	\$996,050
Amount subscribed for on behalf of the Company	\$5,000,000	5,000,000	2,000,000	7,000,000	.....
Total subscriptions of employees and Company	\$6,918,800	\$6,843,700	\$7,019,400	\$8,154,050	\$996,050

\*Of the amounts subscribed there were allotted to the Company \$850,000 of First Loan bonds, \$4,018,750 of Second Loan bonds, \$2,000,000 of Third Loan bonds, and \$7,000,000 of Fourth Loan bonds. †Represents corporate employees only.

## THE SUIT INVOLVING THE RIGHT OF THE SOUTHERN PACIFIC COMPANY TO OWN THE STOCK OF THE CENTRAL PACIFIC RAILWAY COMPANY

In the last annual report, after stating that the decision of the United States District Court at Salt Lake City in favor of the Southern Pacific Company had been appealed by the United States to the Supreme Court of the United States, it was said: "It may be that the appeal will not be brought on for hearing by the Supreme Court so long as railroads are being operated by the President." This forecast has proven to be correct. The case has twice been continued for the term, along with other important trust cases, on motion of the Attorney General. At the next term of the Supreme Court, beginning in October, 1919, if a return of the railroads has taken place or is reasonably certain in the near future, it is probable that the case will be set down for an early hearing. If so, a decision may be expected in the first half of 1920.

## CONTROVERSY ARISING OUT OF THE OREGON AND CALIFORNIA RAILROAD'S LAND GRANT

At the time of the last annual report there had been recently instituted an accounting suit by the United States, seeking to offset against the compensation of \$2.50 per acre for the unsold lands moneys received by the Company, in excess of \$2.50 per acre, by reason of past sales, leases and otherwise, as well as State taxes levied since the forfeiture decision in 1913 and voluntarily paid by the Federal Government to the State of Oregon. That suit is now at issue, and both parties are engaged in preparing for the trial.

## THE SUITS INVOLVING TITLE TO THE OIL LANDS

The suits involving title to the productive oil lands, which more than a year ago were argued and submitted in the United States District Court in California, are still being held under advisement by that court. A decision is looked for any day. The suit to cancel patents to certain other lands alleged but not proven to be oil lands, known as the Elk Hills case, was argued in March last before the Supreme Court of the United States, and is now awaiting the decision of that court.

## GENERAL

Dividends on the capital stock of your Company were declared during the year, payable as follows:

1½ per cent paid April 1, 1918	\$4,092,351.08
1½ per cent paid July 1, 1918	4,092,351.08
1½ per cent paid October 1, 1918	4,092,351.08
1½ per cent payable January 2, 1919	4,127,002.01
	\$16,404,655.25

As stated in the last annual report revolutionary disturbances on the line of the Southern Pacific Railroad of Mexico, with the exception of occasional bandit and Indian raids, practically ceased in the early winter of 1916-1917. A revised estimate places the cost of property destroyed from the beginning of the Madero Revolution, in 1910, to December 31, 1918, at approximately 4,864,700 pesos, equivalent to \$2,432,350. The formation of the Government commission for the investigation and adjustment of claims for damages suffered on account of revolutionary disturbances, mentioned in last year's report, has been completed by the appointment of a president and four members; but thus far it has made little progress, and has taken no action upon our claims, although our fiscal representative in Mexico City has, periodically, filed with the Mexican Government statements showing the amounts due the Company. In addition to the claims for property destroyed there is due the Company approximately 8,460,000 pesos for freight and passenger service performed, for rental of road and equipment, and for material furnished to or confiscated by the various military authorities, bills for which will be filed with the Mexican Government as soon as conditions permit. The average mileage of road operated during the year was 1,007 miles. On account of the unsettled conditions, however, only such maintenance work was done during the year as was absolutely necessary to render it possible to operate trains over those portions of the line that were open for traffic.

The general railroad law of Mexico, under which the several concessions covering the construction and operation of the railway of the Southern Pacific Railroad Company of Mexico were granted, provides that at the end of the ninety-nine years' life of each concession the property embraced thereunder shall pass in good condition without encumbrance, and without further consideration, into the ownership and control of the Mexican Government. Under this law, however, the Mexican Government is required to purchase the rolling stock and material and supplies owned by the railroad company at the time the Government takes over the property, paying therefor in cash the value placed thereon by two appraisers. In order to provide for the loss on the property which will thus pass into the control of the Mexican Government at the end of the concession period, the Board of Directors of the Southern Pacific Railroad Company of Mexico authorized the creation of a reserve, by charging to Profit and Loss the amount estimated to have accrued from the beginning of the concession period to December 31, 1917, the remainder of such loss to be amortized by charges to income during the remaining life of the concessions. A reserve, amounting to \$4,004,476.70, was therefore created during the year, \$3,545,680.48 thereof, representing the proportion of the loss accruing to December 31, 1917, being debited to Profit and Loss, and the remaining \$458,796.22, representing the proportion of the loss accruing during the current year, debited to Income Account.

In addition to the completed lines of railway reported under Properties and Mileage, and the still incomplete line of the Southern Pacific Railroad Company of Mexico, construction is progressing on the lines of the following companies, viz:

	Length of projected line, Miles.	Track completed, Miles.	Grading completed, Miles.	Grading progressing, Miles.
SOUTHERN PACIFIC RAILROAD:				
Harrington to Hamilton, Cal.....	*61.18	61.18	....	....
HOUSTON & TEXAS CENTRAL RAILROAD:				
Dallas, Texas—Belt Line around city .....	15.54	....	....	15.54
VISALIA ELECTRIC RAILROAD:				
Exeter to Strathmore, Cal.....	†16.36	16.36	....	....
California Granite Company Spur..	‡1.37	1.37	....	....
Extension Portex South.....	2.40	....	2.00	.40
Fayette to Lindsay, Cal.....	1.55	....	1.55	....
SAN DIEGO & ARIZONA RAILWAY:				
San Diego to El Centro, Cal.....	147.75	135.31	7.04	5.40

\*Line will not be opened to public for traffic until ballasting is completed. †Opened to public for traffic June 1, 1918. ‡Opened to public for traffic January 12, 1918. §Jointly controlled through ownership of capital stock in equal proportions with Spreckels Brothers.

By order of the Board of Directors,

JULIUS KRUTTSCHNITT,

Chairman of the Executive Committee.

[Adv.]

## Railway Officers

### Railroad Administration

#### Central

**R. M. Robinson**, traffic manager of the Dayton (Ohio) Chamber of Commerce, has been appointed traffic assistant in the Division of Public Service, succeeding **Charles B. Heinemann**, resigned to resume his former position as secretary and traffic manager of the National Live Stock Association.

**John Barton Payne**, general counsel of the Railroad Administration, has been nominated by the President for appointment as a member of the United States Shipping Board, succeeding **E. N. Hurley**, resigned. Before going to the Railroad Administration Mr. Payne was counsel for the Emergency Fleet Corporation.

#### Financial, Legal and Accounting

**L. R. Wood**, has been appointed auditor, of the St. Joseph & Grand Island; and the St. Joseph Terminal Railroad, with headquarters at St. Joseph, Mo., to succeed **J. A. Quinn**, transferred.

**G. W. Oliver**, statistician of the Atchison, Topeka & Santa Fe with headquarters at Chicago, has resigned to establish an office in Chicago as a railroad analyst. Mr. Oliver will specialize in cost analysis and statistical work in connection with freight litigation before the Interstate Commerce Commission, state commissions and the courts.

**C. W. Crow**, chief clerk to the auditor of the Trinity & Brazos Valley, at Houston, Texas, has been promoted to auditor, with the same headquarters. Mr. Crow was born in Texas and began his railway career in the service of the Fort Worth & Denver City, with which road he remained for 20 years. In January, 1916, he resigned from his position with the Fort Worth & Denver City to become chief clerk to the auditor of the Denver & Salt Lake, with headquarters at Denver, Colo. He continued in this capacity until June, 1918, at which time he entered the service of the Trinity & Brazos Valley as chief clerk to the auditor, with headquarters at Houston. He succeeds **L. H. Attwell, Jr.**, who recently tendered his resignation to become receiver and corporate auditor of the Trinity & Brazos Valley Railway Company.



C. W. Crow

#### Operating

**Captain S. L. Racey**, recently discharged from military service, has resumed his duties as superintendent of the Green River division of the Denver & Rio Grande, with headquarters at Helper, Utah.

**H. R. Davis**, general yard master of the Covington, Ky., and Silver Grove terminals of the Chesapeake & Ohio, with headquarters at Covington, has been promoted to assistant trainmaster of the Cincinnati and Northern divisions of the Chesapeake & Ohio, the Chesapeake & Ohio Railroad of Indiana, the Ashland Coal & Iron, the Sandy Valley & Elkhorn and the Long Fork, with the same headquarters.

#### Traffic

**Edward P. Hennessey**, commercial agent of the Chicago, Rock Island & Pacific, with headquarters at Omaha, Neb., has been promoted to division freight agent with the same headquarters, succeeding **John E. Udd**, who has retired.

#### Engineering and Rolling Stock

**E. H. Roelofs**, assistant engineer of motive power on the Philadelphia & Reading, with headquarters at Reading, Pa., has resigned to enter the service of the Baldwin Locomotive Works.

#### Purchasing

**H. G. Davis**, acting storekeeper on the Toledo, St. Louis & Western, with headquarters at Frankfort, Ind., has been promoted to general stores agent, with the same headquarters, in charge of the inspection of ties and other forest products. **C. N. Thacker** will succeed Mr. Davis as storekeeper, with headquarters at Frankfort.

### Corporate

#### Executive, Financial, Legal and Accounting

**William Magivny**, president of the St. Paul Bridge & Terminal Railroad Company for the past 12 years, with headquarters at St. Paul, Minn., resigned on July 1 to engage in private business at Portland, Ore.

### Obituary

**John Bentley Sheldon**, bridge and building supervisor of the Providence division of the New York, New Haven & Hartford, with headquarters at Providence, R. I., died at his summer home at West Kingston, R. I., on July 2.

**Arthur Wray Street**, formerly general eastern freight agent of the Great Northern, who died in New York on July 9, as was briefly noted in our issue of July 11, was born in October, 1847, at London, Ont., and began railway work in August, 1859, as a clerk in the general freight office of the Michigan Central. He later served as chief clerk in the same office and then was made assistant general freight agent. In December, 1888, he was appointed assistant general freight agent of the Toledo, St. Louis & Kansas City, at St. Louis, Mo., and later served first as a commercial agent, and then as assistant general freight agent of the Missouri Pacific. From June, 1891, to October, 1898, he was general manager of the Hoosac Tunnel Fast Freight Line, with office at Chicago, and in April, 1899, became commercial agent for the Great Northern, at Cleveland, Ohio. Mr. Street was later general freight agent of the Northern Steamship Company, and from March, 1903, until the Great Northern Railway was taken over for government operation, he served as general eastern freight agent of that road.

**Matthew J. McCarthy**, superintendent of maintenance of equipment of the Baltimore & Ohio, Lines West, with headquarters at Cincinnati, Ohio, died at his home in that city on July 12. He was born at Susquehanna, Pa., in 1868, and began railway work in 1889 as an apprentice on the Erie, and subsequently worked in a number of railroad shops in the West and Southwest as machinist and foreman. He was for ten years in the service of the Chicago, Burlington & Quincy, at Burlington, Iowa, as machinist, inspector and general foreman, then was with the Michigan Central, as division master mechanic at St. Thomas, Ont., for four years, and during the next two years served as division master mechanic on the Lake Shore & Michigan Southern. Mr. McCarthy then went to the Cleveland, Cincinnati, Chicago & St. Louis, as superintendent of shops at Beech Grove, Ind., and later was assistant superintendent of motive power at Indianapolis, on the same road. In January, 1913, he was appointed superintendent of motive power of the Baltimore & Ohio Southwestern and the Cincinnati, Hamilton & Dayton, at Cincinnati, Ohio, later his title was changed to superintendent of maintenance of equipment of the Baltimore & Ohio, lines west.



# EDITORIAL

## Railway Age

# EDITORIAL

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Thoughtlessness on the part of passengers in throwing material of all sorts out of windows of passenger coaches frequently results in serious injury to railroad employees standing along the tracks. The records in the office of the superintendent of insurance and safety of the Pennsylvania Railroad, show that in 1918 twelve employees were injured in this manner, the injuries resulting in a total of two hundred and twenty days' disability. This is a matter which particularly concerns the maintenance departments of the railroads, as by the character of their work, trackmen and bridge men are daily exposed to this menace. While it is of course a difficult matter to locate the persons in a crowded train who have caused injuries, if they are not seen in the act of throwing the articles out of the windows, prompt action in reporting such incidents together with the co-operation of the police department will result in a fair proportion of the guilty persons being apprehended and disciplined. Aside from the needless suffering caused by such thoughtlessness, with the possibility of fatalities, the loss in time which results is sufficient to warrant vigorous measures being taken to discourage this practice.

### The Results of Thoughtlessness

The need that something be done to remove the menace of the closed angle cock requires no more striking evidence than that afforded by the circumstance of the rear collision which occurred on the New York Central at Dunkirk, N. Y., on the morning of July 1. With the standing train, No. 41, protected by a home block signal 2,000 ft. back and a distant signal 6,000 ft. back of the point at which the collision occurred, the evidence indicates that the engineman of the following train, No. 7, first attempted to control the speed of his train on approaching the distant signal, only to discover that he had no control of the train brakes. The evidence further indicates that he lost his control of the train brakes probably only a few seconds before the need for their use arose, due to the closing of the angle cock at the rear of the tender by a trespasser riding the "blind baggage," who wished to leave the train at Dunkirk. The loss of train control through the closing of an angle cock, generally that at the rear of the tender, has for years been of too frequent occurrence. This has been caused by carelessness or forgetfulness on the part of employees, by trespassers and by other accidental means not always easily identified. As long as the safety of the train may thus be jeopardized without warning the absolute removal of this menace is probably impossible. As long as human fallibility must be depended upon without check, failure to provide an unrestricted brake pipe through carelessness or forgetfulness will occasionally occur. There is no inherent reason, however, why some protection against the tampering of trespassers riding on the trains cannot be provided and some means should be evolved to prevent the possibility of moving the angle cock except by a person on the ground. Further protection at the most vulnerable point in the train might be provided by placing the control of opening and closing the brake pipe passage on

### The Closed Angle Cock

the locomotive and tender in the hands of the engineman. These suggestions apply to passenger service. The means which might be justified by the terrible consequences in loss of life and personal injuries from a failure of the brakes on passenger trains, might not prove equally practicable when applied to freight equipment. The menace in the latter case, however, although perhaps not as serious as in the case of passenger trains, is great enough to demand consideration and persistent effort in the development of means for its removal.

The president has vetoed the rider which would have repealed the daylight saving bill. The chief opponents of the law which provides for setting forward the hands of the clock one hour during the summer months, are the lighting companies and the farmers. The farmers deserve consideration. They claim that their milk schedule is fixed by time of departure of milk trains which is an hour earlier (sun time) in summer than in winter, but that milch cows are not amenable in their habits to the daylight saving law. The result is a loss of milk. Could not milk train schedules be changed? There is a certain amount of expense connected with a change in time-tables and some roads, especially single track roads, might find difficulties in running milk trains an hour later (clock time) in summer than in winter. Would it not, however, be well worth while to incur this additional expense and trouble for the good that will accrue to railroad employees together with all classes of urban citizens through the retaining of the daylight saving law? Furthermore, a great number of people to whom the daylight saving law has been of inestimable value should appreciate such an act as is here suggested on the part of the railroads. Where milk is carried in passenger trains difficulties in the rearrangement of train schedules might, in some instances, be insurmountable, but if a country-wide effort were made by the railroads to accommodate the farmers during the summer months in milk train schedules it is probable that their grievances against the daylight saving law could in part be removed.

### Daylight Saving and the Milk Trains

The conservation of ice is one of the numerous minor details incident to railway operation which is seldom given detailed attention, although when there arises an acute shortage of this material, such as exists in many localities at present, this presents a problem of real importance. The amount of ice used for drinking purposes in offices and on trains is large in the aggregate but the quantity required in the transportation of perishable freight is far larger. The railways must have ice, for its use is imperative in all of these services. The recent mild winter cut down the pack materially, with the result that many roads are now hauling ice long distances while others are buying it locally where formerly they drew on their own supplies. Both of these conditions have added materially to the cost of railway operation. Prompted by

### The Conservation of Ice

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